MONTGOMERY COUNTY, MARYLAND

RESOURCE CONSERVATION PLANS FY 2005

IN SUPPORT OF
ENERGY MANAGEMENT CAPITAL PROJECTS
AND
UTILITY OPERATING BUDGETS

PREPARED BY THE MEMBER AGENCIES OF THE

INTERAGENCY COMMITTEE ON ENERGY AND UTILITIES MANAGEMENT (ICEUM)

February 2004

TABLE OF CONTENTS

GENERAL INFORMATION

This document provides the Resource Conservation Plans submitted by member agencies of the Interagency Committee on Energy and Utilities Management (ICEUM), as required under Chapter 18A-9(d)(2) of the Montgomery County Code, in support of the FY 05 Energy Conservation Capital Improvement Projects and utility operating budgets.

The Interagency Committee on Energy and Utilities Management is responsible for coordinating county government energy conservation efforts, promoting energy efficiency, sharing information, providing technical assistance, and cooperating on the planning and implementation of energy conservation measures. The specific duties of ICEUM are as follows:

1. Establish uniform utility unit costs for county operating budget proposes;

2. Prepare agency Resource Conservation Plans annually, describing current and anticipated energy conservation programs with actual and projected energy and cost savings; and

3. Advise the County Executive and County Council on energy conservation goals, cost savings and new technologies.

The plans contained in this document are prepared in accordance with item number 2, above. As in previous years, ICEUM members describe their energy management goals and objectives, and provide information on the performance of some of the efforts undertaken in previous years.

This document includes introductory materials and an Executive Summary prepared by the Department of Environmental Protection.

The Department of Environmental Protection, The DPW&T Fleet Management Division, and the Office of Management and Budget do not have Energy Conservation Capital Improvement Projects or utility operating budgets. These agencies provide information, technical support, and energy planning services to the Interagency Committee on Energy and Utilities Management.

INTRODUCTION

The objective of an energy management program is to use engineering and economic principles to control the cost of energy needed to operate buildings and provide services.

In order for energy management to be effective it is first necessary for the energy manager to understand how much energy is being consumed and by what specific activities or equipment it is used. With this information it becomes possible to identify opportunities for improvements in energy efficiency and to determine the amount of energy and money that can be saved by each measure. The energy manager can then compare the cost effectiveness of potential measures, and evaluate the effectiveness of measures that were implemented in the past. In order to report on these essential elements of energy management, the Interagency Committee on Energy and Utilities Management (ICEUM) has developed a uniform format for Resource Conservation Plans.

This format is intended to provide a consistent set of criteria for all ICEUM member agencies to develop data collection methods. This data can then be used to evaluate the energy performance of buildings and systems within buildings, and to determine where improvements are needed and where existing energy efficiency practices are most effective. Each agency's Resource Conservation Plan contains summary forms. These forms are organized to include the main components of energy planning, and are divided into sections on:

- general facilities characteristics,
- energy consumption information,
- existing energy management measures which are currently saving energy,
- new energy management measures implemented during the current fiscal year,
- and measures planned for implementation during future years.

Each member of ICEUM currently has programs in place to provide energy management. However, programs differ widely among agencies. Therefore, agencies include narrative and supplemental information in the Resource Conservation Plans in order to highlight activities, policies, and cost savings that are not easily presented in numerical or table format.

ICEUM MEMBERS

Executive Branch

Environmental Protection
- Division of Environmental Policy & Compliance
  - Ann Elsen, Energy Planner and ICEUM Chair
  - Ellen Scavia, Chief, Environmental Policy & Compliance

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- Division of Operations
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  - Victor Sousa, Senior Energy Engineer, EMSS
- Division of Fleet Management Services
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Independent Agencies

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- Department of School Facilities Management
  - Ron Balon, Energy Manager
  - Jeffrey Price, Utility Analyst

Montgomery College
- Office of Facilities
  - J. Michael Whitcomb, P.E., Energy Manager
  - Charles E. Boone, Consultant

Maryland-National Capital Park and Planning Commission
- Department of Parks
  - Nancy Keogh
  - Richard Anderson, Consultant

Washington Suburban Sanitary Commission
- Facilities Maintenance Division
  - Rob Taylor, Energy Manager

Montgomery County Council

Chuck Sherer, Staff Liaison

EXECUTIVE SUMMARY

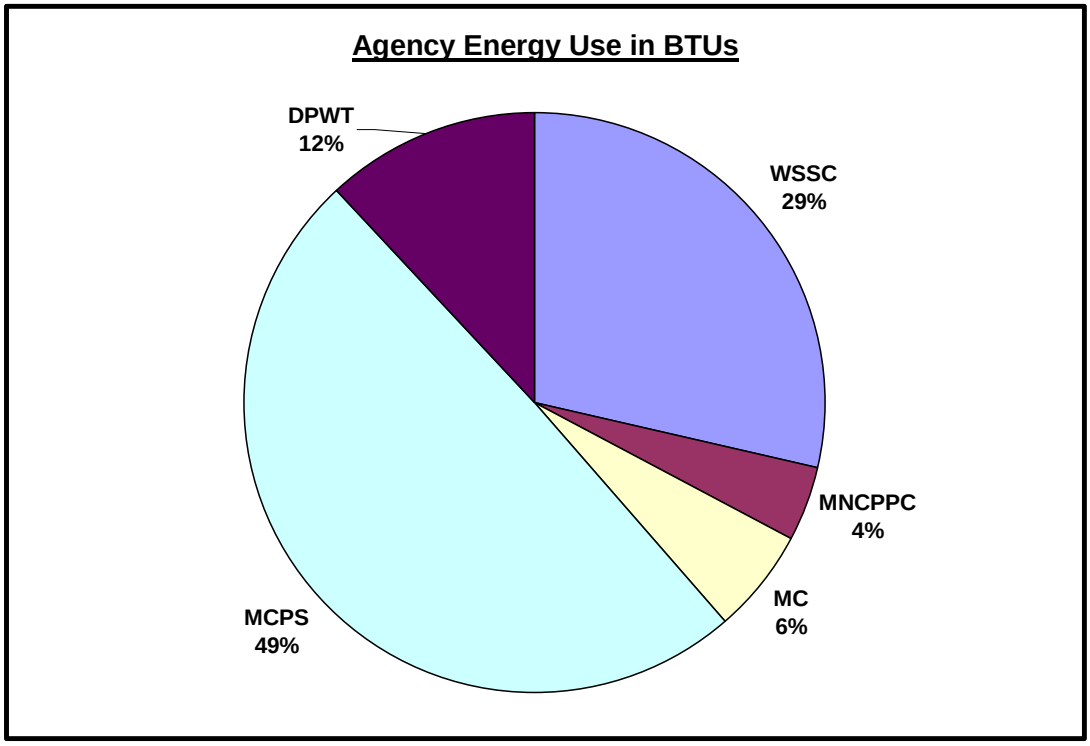
ICEUM member agencies began implementing comprehensive energy management programs after the energy crisis of the 1970s. Agencies have been tracking energy use and energy costs for well over a decade. It is important to make a distinction between energy consumption and energy costs. Energy costs fluctuate with rate changes and are influenced by a variety of external factors. Energy consumption is the actual amount of energy used to operate facilities, and when presented in a common unit of measurement, provides a clear picture of how changes in facilities affect total use. For purposes of presenting energy consumption in this document, all fuel types have been converted to British Thermal Units (BTU).

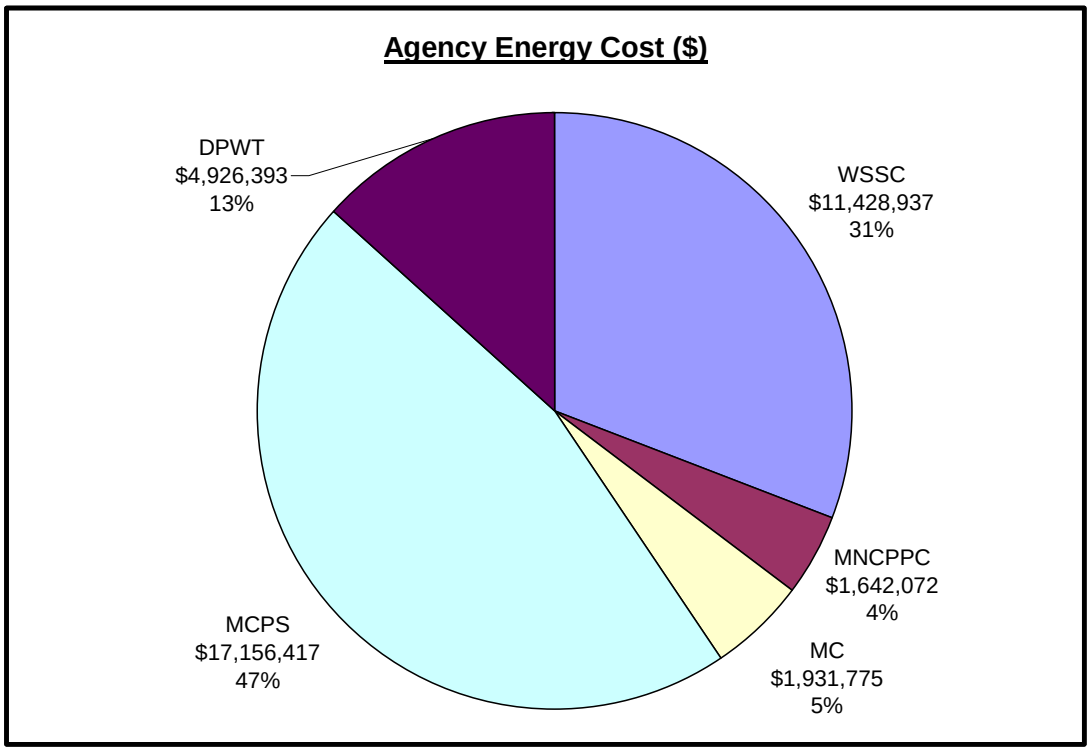
The following table shows the total energy consumption for each agency in British Thermal Units for the most recent year in which actual figures are available (FY 02).

Energy Consumption and Energy Cost

Agency	Total Energy Consumption (BTU)	Total Energy Cost ($)
MC (Montgomery College)	**155,119,675,843**	**$1,931,775**
WSSC (Washington Suburban Sanitary Commission)	**788,905,979,977**	**$11,428,937**
MNCPPC (Maryland National Capital Park & Planning Commission)	**115,154,434,594**	**$1,642,072**
DPWT (Department of Public Works and Transportation)	**331,811,896,919**	**$4,926,393**
MCPS (Montgomery County Public Schools)	**1,359,184,838,835**	**$17,156,417**
Total	**2,750,176,826,168**	**$37,085,594**

This information is presented graphically on the following page, to show the relative portion of the total energy budget for the County that is represented by usage and cost for each agency.

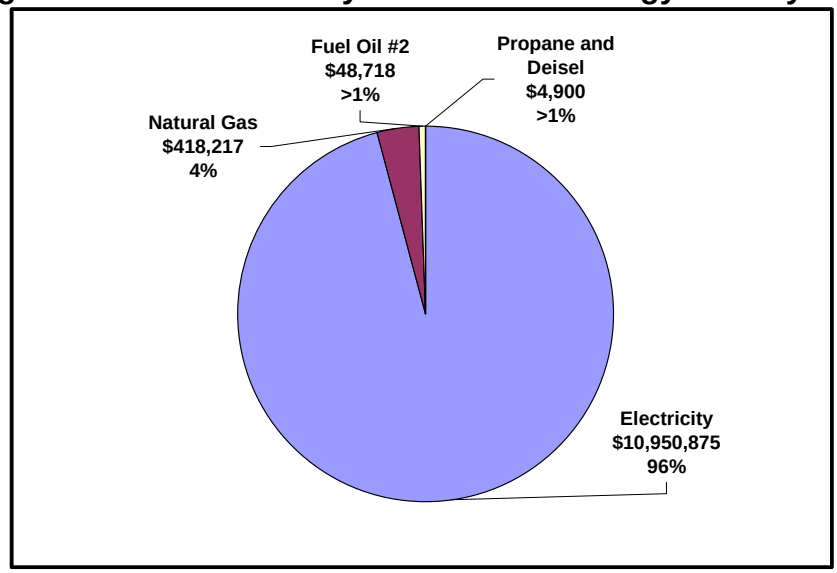

Agency Energy Use in BTUs
DPWT
12%
WSSC
29%
MNCPPC
4%
MC
6%
MCPS
49%


Agency Energy Cost ($)
DPWT
$4,926,393
13%
WSSC
$11,428,937
31%
MNCPPC
$1,642,072
4%
MC
$1,931,775
5%
MCPS
$17,156,417
47%

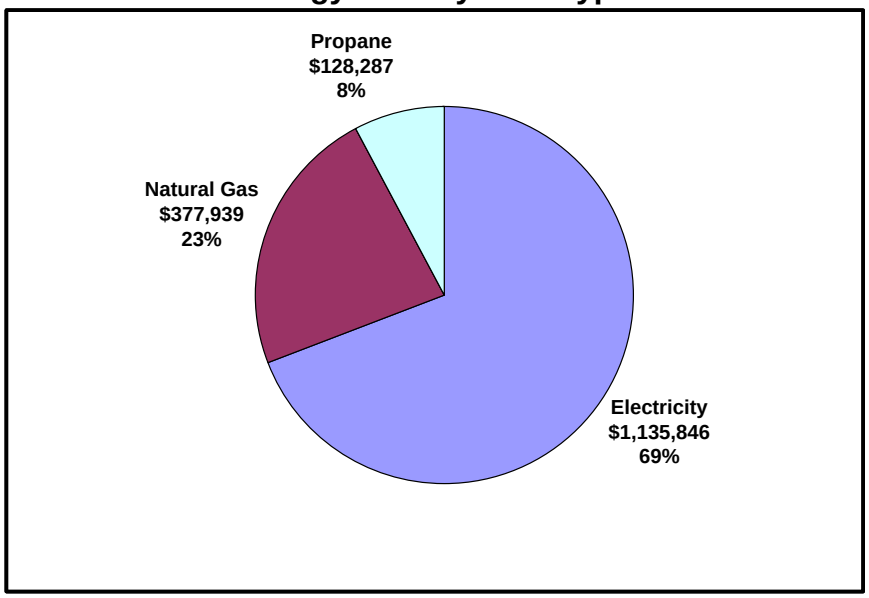
Energy Costs

Aggregate total energy costs to the County agencies represented in this report are approximately **$37.1 million** per year. The relative portion of energy costs for each agency is slightly different than the energy consumption in BTUs. This is due to the different costs for each fuel type, and the relatively higher cost of electricity per BTU than other fuels. The following graphs summarize the total energy costs for each agency by fuel type. This is based on total consumption and unit cost rates for FY 03.

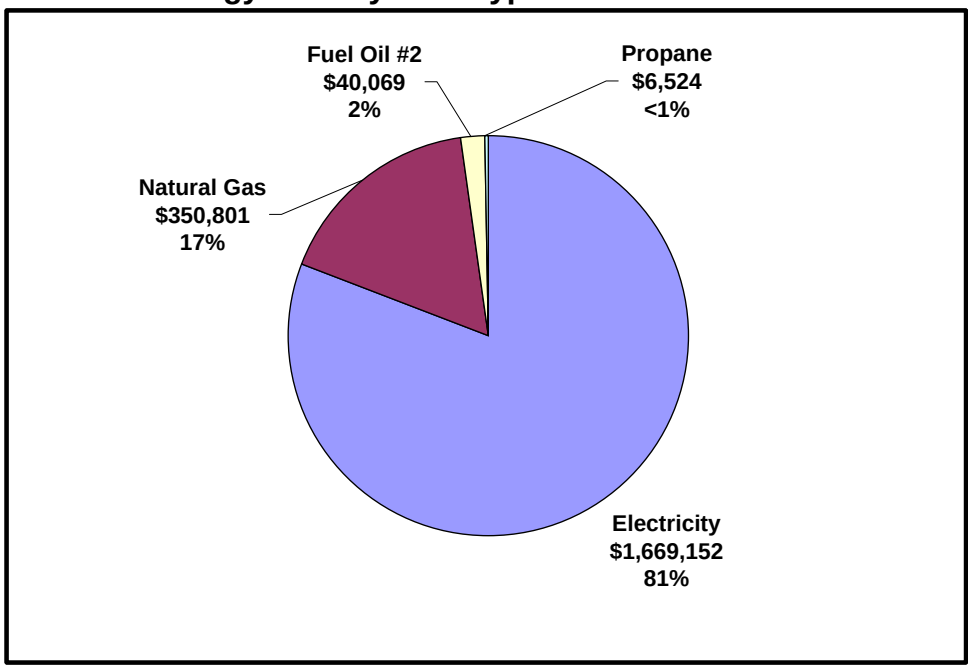
Washington Suburban Sanitary Commission Energy Cost by Fuel Type



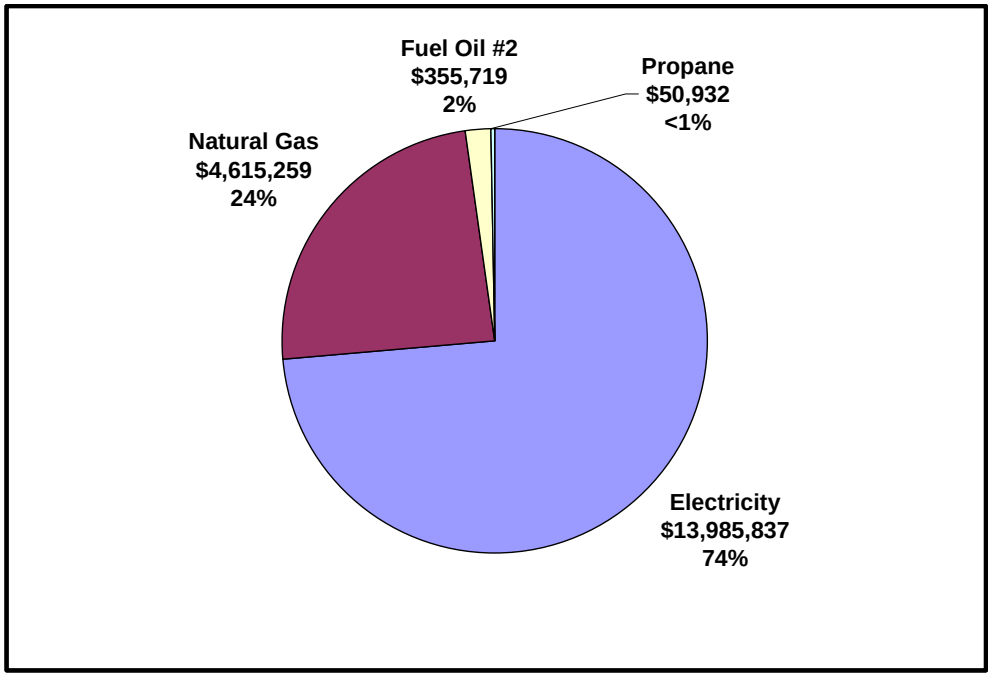
Maryland National Capital Park & Planning Commission Energy Cost by Fuel Type

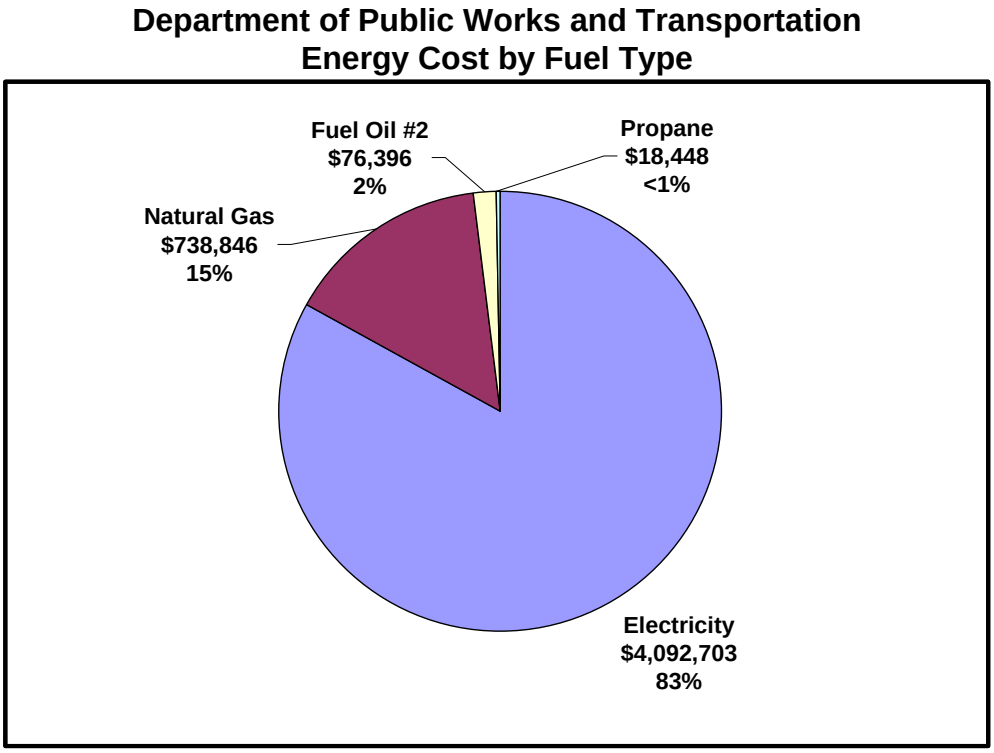


Montgomery College
Energy Cost by Fuel Type



Montgomery County Public Schools
Energy Cost by Fuel Type





Future Energy Cost Savings

A central feature of the Resource Conservation Plans is the information provided in support of Capital Improvement Projects. Each agency reports on plans for continued implementation of energy efficiency measures over the coming year (FY 05). Past performance has demonstrated that energy efficiency is a worthwhile investment. Current budgetary constraints, coupled with the uncertainty of future energy prices, further emphasize the need to use energy resources efficiently.

The table on the following page summarizes the energy efficiency measures that each agency plans to implement in FY 05. Estimated implementation costs and annual cost savings are provided for each measure where available.

Energy Cost Savings to Result from Future Energy Efficiency Measures
To be Implemented in FY 05

Agency / Measure	Initial Cost of Measure ($)	Annual Energy Cost Savings ($)
Montgomery College:		
Tech Center Retrofit: Lighting, HVAC & Controls	200,000	20,000
Montgomery College Total	**200,000**	**20,000**
Washington Suburban Sanitary Commission:		
Energy Performance Project – Phase IIA to completion	7,800,000	300,000
New De-watering Facility (Piscataway)	6,500,000	100,000
Energy Performance Project – Phase IIC – Electric Supply/Supply Management	0	550,000
WSSC Total	**14,300,000**	**950,000**
Maryland National Capital Park and Planning Commission:		
Selected Heat Pump and HVAC Roof-top Unit Replacements	37,000	9,250
Employee Training and Participation Program	9,500	15,000
Temperature and Operations Control Program	6,000	10,000
Un-occupied Cycle Controls Program	3,000	10,000
Cabin John Complex and Brookside Gardens Complex Operations and Maintenance Programs	9,500	15,000
MNCPPC Total	**65,000**	**59,250**
DPWT / Division of Operations:		
HVAC/Elec. Replacement	unknown	6,000
Energy Conservation	unknown	65,000
DPWT/D0 Total	**unknown**	**71,000**
Montgomery County Public Schools:		
Energy Management System Upgrades	355,000	99,000
Lighting Retrofit of CESC	145,000	38,000
MCPS Total	**500,000**	**137,000**
Aggregate Total for All Agencies	**>$15,065,000**	**$1,237,250**

Utility Deregulation

Deregulation of the electricity and natural gas industries continues to affect all agencies. Through the Electricity Deregulation Task Force, ICEUM members participated in the County's aggregated cooperative competitive procurement of electricity. The buying group for this procurement consists of all ICEUM member agencies with electricity budgets, the Housing Opportunities Commission, and ten municipalities.

This procurement resulted in total savings of approximately 5.4 million dollars in electricity costs for participating agencies and municipalities during the first four years of electricity deregulation. Montgomery County is the only government entity in the region to have achieved this level of cost savings through electricity procurement.

In addition to the savings listed above, ICEUM member agencies received credits in FY 01 and FY 02 as a result of Pepco's divestiture of generating assets. Also, in November 2001 the level of Pepco's "generation procurement credit" was raised significantly, producing additional cost savings. The "generation procurement credit" is an amount that Pepco refunds to distribution customers if Pepco is able to purchase power at a cost lower than the rate it charges for Standard Offer Service (SOS).

ICEUM member agencies are currently in the process of implementing a second cooperative competitive procurement of electricity. This purchase will be conducted over the next couple months, in a two phase procurement process, according to new procurement regulations specific to the purchase of electricity and natural gas. Due to changes in the electricity marketplace, it is reasonable to expect bid prices to be higher than those that were realized in our last electricity purchase. This potential increase, combined with the loss of the "bonus" obtained via Pepco's generation procurement credit, as well as recent increases in the County's fuel energy tax rates has prompted ICEUM members to revise electricity rate estimates upwards. This overall increase is reflected in the ICEUM Utility Rates and in agency budgets.

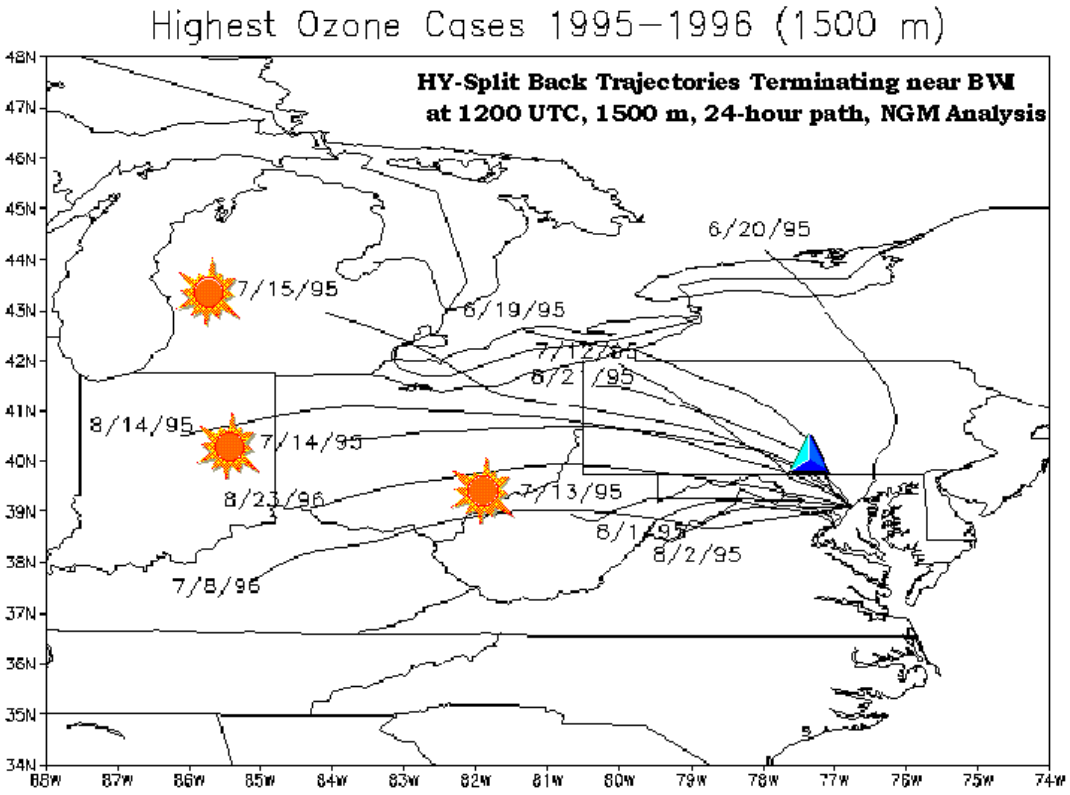
Environmental Considerations

The federal Clean Air Act sets air quality standards and deadlines for achievement of those standards. The Washington Metropolitan Region is in "severe" non-attainment for ground level ozone. Working with the Metropolitan Washington Council of Governments, Montgomery County has contributed several proposed measures to the Maryland State Implementation Plan for meeting Clean Air Act requirements, including the purchase of renewable energy generated electricity.

Our region's ozone problem is complex due to the fact that ozone is not discharged directly. Ozone is formed when sunlight and high summer temperatures cause photochemical reactions to occur between emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NOx). Local efforts to reduce emissions of these pollutants have shown limited success in reducing the ground level ozone problem, due

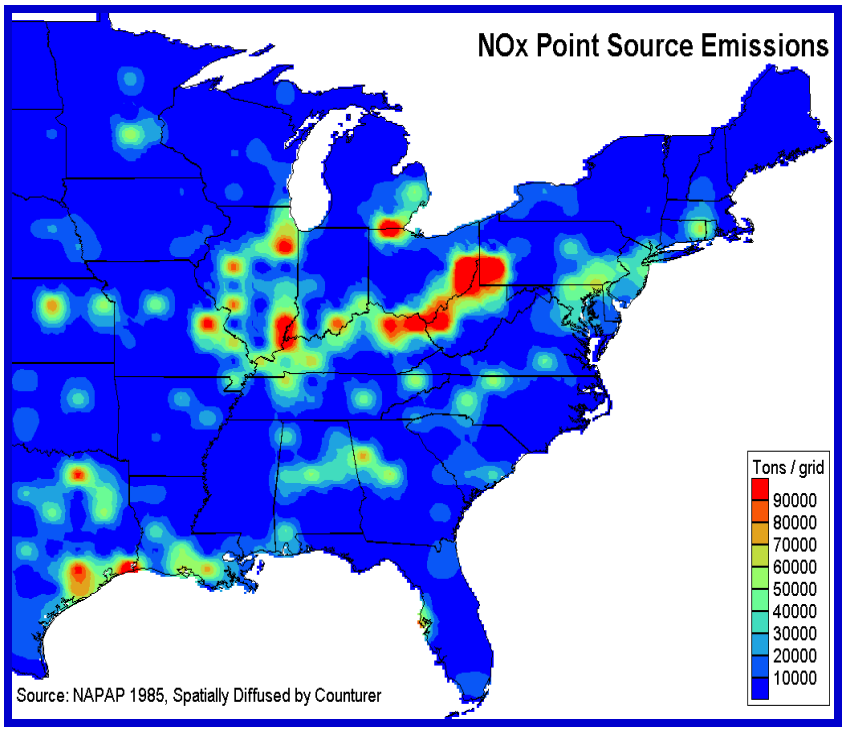
to the fact that a considerable portion our area's NOx emissions actually come from point sources outside the state. Fossil fuel burning electricity power plants are major contributors to this problem.

Below is an image, provided by the Maryland Department of Environment, which shows the general directions from which N0x emissions travel to our region. The effect of emissions from distant sites resulting in ground level ozone in a down-wind area is known as "ozone transport."



According to the Maryland Department of Environment, Maryland's geographic location places it at the "air pollution crossroads" when if comes to emissions transport. Air that contains pollution drifts to our area primarily from states to the west and the south. In addition, some of the air pollution that leaves our area and is transported to the north actually "re-circulates" back to us. Power plants, cars and area sources are all involved in the transport process. It is estimated that approximately 66% of the NOx emissions that reach our area arrive as a result of ozone transport.

The image below, also provided by the Maryland Department of Environment, shows the locations of point sources for N0x emissions. The brightly colored areas closely correspond with the locations of several fossil fuel-powered electric generating plants.



Activities of ICEUM member agencies to reduce energy consumption help to limit air pollution events in our area. In particular, reductions in electricity consumption help to reduce summer concentrations of ground level ozone by reducing the NOx precursor that drifts into our area from electric power plants within the PJM region.

County Wind Energy Purchase

A resolution passed by the County Council with the support of the County Executive in March of 2004 strongly encouraged ICEUM member agencies to purchase 5% of their electricity requirements in the form of zero-emissions clean renewable energy. To that end ICEUM has incorporated a 5% wind energy requirement in the upcoming solicitation for competitive purchase of electricity.

In 2003, Montgomery County's consultant on electricity deregulation (Mondre Energy, Inc.) produced a report outlining the cost and feasibility of a renewable energy purchase. Findings of the consultant and of ICEUM reveal that it is possible for the County to purchase zero emission electric power, from sources that are geographically located such that local air quality improvements can be realized, at an approximate cost

of $400,000 per year for 5% of the County's total electrical load. This cost estimate was based on electricity cost and consumption figures in 2002. It is expected that the cost of such a purchase at this time will be higher.

This purchase will meet and exceed the requirements of the Green Power Partnership, which Montgomery County joined in 2003, and would demonstrate an ongoing commitment to air quality improvements. In addition, purchasing 5% of our electricity from a zero emissions source will provide significant progress toward meeting our greenhouse gas emissions reduction goal under the Cities for Climate Protection program.

Most significantly, this renewable energy purchase has been included in the State Implementation Plan (SIP) for attainment of air quality standards under the Clean Air Act. Through coordination with the Metropolitan Washington Council of Governments (COG) Air Quality and Energy Policy Advisory Committees, Montgomery County has been able to invite other jurisdictions within the region to join us in our electricity purchase. This provides the potential for our wind purchase to become a regional effort, with even greater air quality benefits for Montgomery County and increased cost savings due to a large purchase volume.

INTERAGENCY COMMITTEE ON ENERGY AND UTILITIES MANAGEMENT

UTILITY RATES

October 1, 2003

FY04, FY05

Note: Unit cost or percentage change is a cap. Individual agency unit costs may be below the ICEUM established number, but can not exceed the projection. Energy cost projections assume the fuel energy tax at the level established in FY99.

	SUBMITTED FY 04	PROJECTED FY04	PROJECTED FY05
Electricity	**7.6%** increase over Actual FY02	**9.2** %increase over Actual FY 03	**21%** increase over Actual FY 03
No. 2 Fuel Oil	$ **0.80** per gallon	$ **0.84** per gallon	$ **0.86** per gallon
Natural Gas	$ **0.90** per therm	$ **1.00** per therm	$ **0.98** per therm
Motor Fuels:			
Note: Includes $0.235 per gallon State tax.			
Unleaded	$ **1.10** per gallon	$ **1.10** per gallon	$ **1.35** per gallon
Note: Includes $0.245 per gallon State tax.			
Diesel	$ **1.05** per gallon	$ **1.05** per gallon	$ **1.30** per gallon
Note: CNG rate excluded Federal excise taxes, which the County does not pay.			
CNG: ($/gallon equivalent)			
Slow Fill.	$ **1.00** per g.e.	$ **1.00** per g.e.	$ **0.90** per g.e.
Fast Fill	$ **1.25** per g.e.	$ **1.25** per g.e.$	**1.49** per g.e.
Ethanol	**$ 1.45** per gallon	**$ 1.45** per gallon	**$ 1.68** per gallon
Propane	$ **1.00** per gallon	$ **1.00** per gallon	$ **1.00** per gallon
Water & Sewer	**0%** increase over Projected FY03	**0%** increase over Actual FY 03	**3%** increase over Actual FY 03

MONTGOMERY COUNTY DEPARTMENT
OF PARK AND PLANNING

RESOURCE CONSERVATION PLAN

2005
(FY)

January 2, 2004

TABLE OF CONTENTS

Page

RESOURCE CONSERVATION PLAN – FY 2005

The Maryland-National Capital Park and Planning Commission
Department of Park and Planning, Montgomery County

I. GENERAL INFORMATION

The Maryland-National Capital Park and Planning Commission was established by the Maryland General Assembly in 1927. The Commission serves the bi-county area of Prince George's and Montgomery Counties. This area has a population of 1.7 million citizens and extends over 1,000 square miles adjacent to the Nation's Capital. The purpose, powers, and duties of the Commission are found in Article 28 of the Annotated Code of Maryland. Pursuant to this Article, the Commission is empowered to:

-acquire, develop, maintain, and administer a regional system of parks, defined as the Metropolitan District;

-prepare and administer a general plan for the physical development in the areas of the two Counties defined as the Regional District; and

-conduct a comprehensive recreation program for Prince George's County.

The Commission's function in Montgomery County is carried out by the Montgomery County Department of Park and Planning under the guidance of the Montgomery County Planning Board. The staff of the Department provides recommendations, information, analysis, and services to the Planning Board, County Council, other agencies of government, and the general public. The Department functions within the context of a budget and work program annually recommended by the County Executive and approved by the County Council, as amended at the bi-annual meetings.

The Department oversees the acquisition, development, and management of a nationally recognized, award winning park system providing County residents with open space for recreational opportunities and natural resources stewardship. The current system represents more than 32,000 acres and 382 parks of different sizes, types, and functions, including stream valley, conservation, regional, special, local, and community parks. Within these parks can be found a diversity of recreational activities and opportunities including hiker-biker trails, ball fields, athletic fields, adventure playgrounds, boating, golfing, skating, tennis facilities, and conference and recreation centers. During this past year, park visitation (including Enterprise Fund operations) exceeded 12 million.

The Department is also responsible for the preparation of master plans and sector plans, which are recommended by the Planning Board and approved by the County Council. The Department reviews development applications for conformance with existing laws, regulations, master plans, and policies and then presents its recommendations to the Planning Board for action.

The Department gathers and analyzes various types of census and demographic development for use in reports concerning housing, employment, population growth, and other topics of interest to the County Council, County Government, other agencies, the business community, and the general public.

II. THE RESOURCE CONSERVATION PLAN

A. **Overview**

The Resource Conservation Plan provides a means for the Commission to report on activities that are in keeping with this Statement, by both helping to protect and conserve the environment, and by making the built environment more comfortable and therefore, more enjoyable, to the citizens of Montgomery County.

This document presents the efforts of the Department of Park and Planning in the areas of energy efficiency. This effort includes the plans, accomplishments, and continuing activities of M-NCPPC in the realm of resource conservation

It is important to note when comparing energy usage from year to year that Montgomery County continues to grow. The population of Montgomery County has increased from 757, 027 (as per the 1990 Census) to 873,341 (as per the 2000 Census). Plan production, the number of parks, and park visitation have also grown. In the past two fiscal years, the Commission has become responsible for various new facilities, in particular, South Germantown Recreational Park Splash Playground, Ridge Road Recreational Park, Needwood Golf Course Maintenance Yard, and the restoration of several historic buildings. This growth directly impacts park usage, resulting in more gasoline usage, longer work hours, more lights late in the workday, more heat or A/C lost through doors, and more energy used maintaining and repairing facilities and equipment. As a result, our energy savings program has concentrated on lowering quantities per usage…lower wattage fixtures, lower therm boilers, and lower flow plumbing fixtures… when we refurbish buildings and facilities. New buildings and expansions incorporate the latest in resource conservation technologies, including the use of recycled materials.

Resource Conservation Plan
FY 2005
Summary

The information on this page reflects the facilities owned or operated by this agency as of the end of FY 03 (June 30, 2003)

Agency	The Maryland-National Capital Park and Planning Commission		
Number of Facilities	201* Facilities that have utilities	Change in number of facilities	
Total square feet	757,637	Change in total ft^2	
Average operating hrs/year	Varies	Change in avg. operating hrs/year	
Other changes effecting energy consumption	**1-UTILITY FACTORS IMPACTING PROPOSED BUDGET** **ELECTRICITY** The Commission has been a member of the Interagency Committee on Energy and Utility Management (ICEUM) since its formation in 1983. In 1997 it became a member of the Montgomery County Electric Deregulation Task Force, a group whose core members are ICEUM members. The agencies agreed to undertake an aggregated, cooperative procurement of electricity supply (Generation and Transmission) at its earliest opportunity practicable and permissible under the laws of Maryland and the orders of the Maryland Public Service Commission (PSC). July 1, 2000 was established by the PSC as the date whereby deregulated electricity could be purchased in the Pepco, BGE and Allegheny service areas. With this in place the Task Force agencies, under the lead of the Montgomery County Government, bid an eighteen- month contract, December 2000 to May 2002, to procure electricity. A contract was awarded to WGES to provide a savings of 9% over the Standard Offer Service (SOS) for the majority of Pepco accounts. This savings was in addition to the savings realized from each utility over the pre-deregulation rates. Over the life of the contract, $6,631 was saved in Montgomery County accounts for FY2001, ($20,016 for Prince George's County accounts) and $63,967 was saved in Montgomery County accounts for FY2002 ($170,053 for Prince George's). This contract included the ability to extend the contract for an additional twelve months. The Task Force exercised this option and WGES also extended a 4% discount to several accounts not covered by the original contract and extension. These provided a savings of $15,496 in Montgomery County ($69,444 in Prince George's) for FY 2002, and a savings of $49,710 in Montgomery County for FY2003 ($57,840 in Prince George's). The County Council then approved a thirteen-month extension of the contract until June 2004. This provided a savings of $29,650 in Montgomery County for FY2003 ($73,040 in Prince George's) and an estimated savings of $79,360 in Montgomery County for FY2004 ($130,880 in Prince George's). In addition, savings were realized through Divestiture, a process that resulted when Pepco sold their generating facilities to Mirant. In FY2001 this was $81,847, $98,443 for FY2002 and $6,618 for FY2003. Unlike the supply savings from WGES these savings are not reflected in the Utility Projection Report since Divestiture was a one-time occurrence and distorts the year-by-year comparison of electricity costs. A third savings began in November 2001. The Generation Procurement Credit (GPC) is a credit received if Pepco is able to procure power at a lower cost than is contained in the rates at the time of its sale of its generating assets. For the first year the savings were several hundred dollars but for the second year this was estimated to be $22,000 in FY2002 and $25,500 in FY2003 and expected to be $32,600 in FY2004 and $9,800 in FY2005 as the rate has been reduced. The rate increase of 16.7 % is under the guidelines of 21.0 % over FY2003. The reasons for this large increase is as follows:		

*With the end of SOS as it has been during deregulation, prices are expected to rise significantly FY2005.

*Lowering of the GPC causes the overall cost to increase.

*The County Council tripled the energy tax for FY2004 and FY2005.

*The County Council has mandated a target of at least 5% of the total annual electric load be supplied by clean renewal energy generated power. This renewal power comes with a higher per unit cost.

*The above increases have been offset by a projected 2% per year (FY2004 and FY2005) reduction in usage as a result of the efforts of the Energy Consultant and a team of employees (Technical Advisory Group) dedicated to achieving this goal.

SOS, with price freezes/caps, ends June 30,2004. Discussions have been ongoing in the PSC to determine the process that is to follow. Phase I and II Settlements have resulted. SOS will be provided at market prices to Maryland's retail customers as a result of wholesale procurement process. These prices are to be made available at least two months prior to the beginning of the service period. The Task Force itself has disbanded and the responsibility for future decisions turned over to ICEUM. Currently options are being explored.

NATURAL GAS

Natural Gas was actually deregulated before electricity was but it did not take hold until the same core group of agencies involved in the electricity procurement decided to procure gas together under the lead of Montgomery College. The Commission had taken an earlier step by taking advantage of a State of Maryland contract in Fy2001. The College's contract was for FY2002 and like the electricity contract; the bid was awarded to WGES. At the time the contract was awarded the New York Mercantile Exchange (NYMEX) futures index was considerably lower than it had been in prior months. While the index eventually went lower the price was considerably better than an earlier award would have brought. While the contract had several options the group decided to rebid the contract. Fortunately, the NYMEX index had continued to drop from 59.3 to 30.0 cents per therm and the balancing charge dropped from 6.94 to 1.30 cents per therm. This provided a significant savings in FY2003 as prices spiked during the year. For FY2004 the contract was extended however the NYMEX had returned to its FY2002 level. In addition the "basis" had increased from $0.12 to $0.182 per therm as a result of market premium demanded by holders of pipeline capacity, lowered production of gas, increased volatility and record low levels of storage according to WGES. Because of the high NYMEX price the "floating" option was selected. The price started at $0.61 per therm and dropped to $0.501, the point the Commission locked in its price.

The rate of 98.0 cents per therm is within the ICEUM guidelines of 98.0 cents per therm. The reasons for the change are as follows:

*The increase in gas as a result of NYMEX and "basis" prices.

*The County Council tripled the energy tax.

*These increases have been offset by a 2% reduction in usage as was described under electricity

The current contract has the ability to be extended for two more, twelve-month periods. The agencies will meet later in FY2004 to decide what future action should be taken. Currently, the NYMEX future index for FY2005 is 2.0 cents per therm lower than the current price. The FY2004 and FY2005 usage has been decreased from that of FY2003 to reflect the fact that FY2003 was a very cold winter compared to the average and that FY2002 was a warmer than normal winter.

WATER/SEWER

For several years WSSC has had no rate increases. As the rate structure is geared towards higher prices for higher water use, the cost is related to how water is used at each facility. The Utility Projection Report shows the FY2004 and FY2005 usage as that of FY2003 except for new facilities. This increase is offset by the same 2% reduction explained in electricity. The increase of 3% is within the ICEUM guidelines of 3%.

PROPANE

Propane usage within the Commission is small. The FY2003 cost was $1.25 per gallon as these prices mirrored the natural gas cost spike. The projected FY2004 and FY2005 of 98.0/95.0 cents per gallon are within the guidelines of $1.00. Propane cost is also affected by the County Council action on energy tax and the 2% reduction explained in electricity. The FY2004 and FY2005 usage was treated in the same manner as natural gas usage.

2- ENERGY MANAGEMENT

The Montgomery County agencies comprising ICEUM reap the benefit of having an Energy Manager to coordinate the many facets involving management of utilities and resource conservation. In the early and mid 1990s the Commission established an Energy Conservation Committee chaired by an Architect and comprised of technicians in various fields. This Committee coordinated energy conservation capital projects and monitored park designs for conformance to energy efficient standards. Various buildings were audited to determine deficiencies and projects implemented to address these deficiencies. Articles on energy conservation practices and measures were published in Commission newsletters. After the Chair left the Commission energy conservation projects were still implemented however focus faded without leadership.

In 2001 the importance of utility management within the Commission slowly started a turnaround spurred by Deregulation.

In the Commission's FY2004 Resource Conservation Plan the intention of hiring a consulting company to act as energy manager was a primary goal. That process was completed and the company is on-board at the start of FY2004.

The tasks to be undertaken in the first year of the energy management program are as follows:

- Develop Work Plan and Implementation Schedule
- Establish an Energy Management Advisory Team
- Conduct Staff Training and User Involvement Program
- Establish an Awards Program
- Assist with the implementation of the Capital Improvement Program
- Assist with the ongoing Data Management Program
- Assist with the preparation of the ICEUM Annual Energy Program Report
- Attend ICEUM Quarterly Meetings
- Monitor and Assist with the County Energy Procurement Program
- Review New Building Plans and Documents
- Develop Program Guidelines
- Provide Technical Support
- Prepare Commission Annual Reports and Presentations

The activities underway in FY2004 are:

- Conduct assessments of key building complexes
- Develop a detailed work plan
- Conduct a series of Employee Awareness Programs
- Conduct a "Turn it Off " Campaign and Program
- Post "Turn it Off" reminder signs at all staff locations
- Issue Employee Information Brochure – Home and Work
- Conduct Advisory Team meetings
- Conduct – Half Day Training for Facility Operations and Maintenance Staff
- Install a web based FASER Report Program on computers for Divisions Managers and Key Facility Operations Staff
- Conduct a "Find the Meter Contest" by Division and Facility
- Establish "Best Idea" for No Cost Savings Contest
- Implement selected operation improvements at the key building complexes

3- DATABASE for UTILITY MANAGEMENT

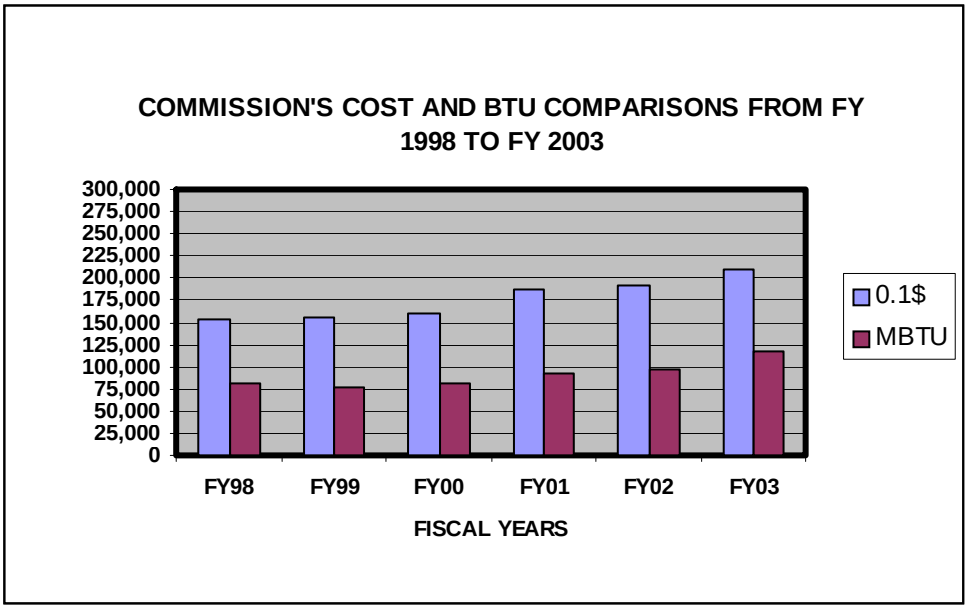
Since 1998, the Commission has used the Fast Accounting System for Energy Reporting (FASER) to maintain utility databases for electricity, natural gas, water/sewer, propane and telephone. With the advent of electric deregulation the Commission retained a consultant in 2001 to oversee, on a bi-county basis, that utility bills were correct (numerous billing errors were occurring) and paid promptly, that the FASER database was up to date and correct as it was to be used for historical record, proper budget projection, procurement of supply contracts for electricity and natural gas and eventually be the basis for quantification of the success of an energy conservation program, as described above. In addition, frequent review of the data can spot unusual consumption that can be brought to the attention of operating personnel and be used to gauge usage/cost and how that compares to budgetary amounts.

The chart on page 9 shows the Commission's cost and BTU comparisons from FY1998 through FY2003. The largest increases were in FY2001 as a result of the expansions of the Cabin John and Wheaton Ice Rinks and FY2003 as a result of a significant increase in weather degree-days.

4-NEW/ UPGRADED FACILITIES

The FY2004 Proposed Budget includes money for new facilities as follows: Electricity-Popular House, lights for baseball and softball fields at Damascus Regional Park and ball field lighting at Wheaton #3 softball field. Water/sewer- new drinking fountains at Manor Oaks and Rock Creek Hills.

Utilities:	units	total consumption (actual FY03)	Percent change from actual FY02	total cost (actual FY03) $	Percent change from actual FY02
Electricity	kWh	16,250,348	7.6%	1,135,846	9.6%
Natural Gas (firm)	therms	502,785	27.0%	377,939	-2.5%
Natural Gas (Irate)	therms	___	___%	___	___%
Fuel Oil #2	gallons	___	___%	___	___%
Propane	gallons	101,977	50.4%	128,287	128.4%
Water/Sewer	gallons	66,705	2.3%	458,826	5.7%
Total				2,100,898	9.8%


COMMISSION'S COST AND BTU COMPARISONS FROM FY 1998 TO FY 2003
300,000
275,000
250,000
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
0
FY98
FY99
FY00
FY01
FY02
FY03
FISCAL YEARS
0.1$
MBTU

New Measures

This table shows information on resource conservation measures implemented during FY 04 (July 1, 2003 through June 30, 2004)

Measures - New: (Implemented during FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Selected Heat Pump and HVAC Roof-top Unit Replacements	June 2004	$32,000	$9,400 Annual Service Cost	Electricity	130,000 kWh	$8,000 Annual Cost Avoidance
Total		$32,000	$9,400			$8,000
Operations and Maintenance:						
Implementation of Energy Management Program - Stage One	June 2004	$12,000	NA	Natural Gas, Propane, and Electricity	1,700 therms, 500 gallons and 134,000 kWh	$10,000 Annual Cost Avoidance
Employee Training, Participation Program, and "TURN IT OFF" Campaign	June 2004	$9,500	NA	Natural Gas, Propane, and Electricity	2,400 therms, 800 gallons and 200,000 kWh	$15,000 Annual Cost Avoidance
Energy Assessments of Key Building Complexes	June 2004	$7,000	NA	NA	NA	NA
Total		$28,500				$25,000
Description of Activities:						
See Energy Management Section						

Existing Measures

This table shows information on resource conservation measures implemented prior to FY 04

Measures - Existing: (implemented from FY 98 to FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Operations and Maintenance:						
Total						
Description of Activities:						

FY1998-FY2003

Lighting

*FY1998 - Tennis/basketball court lights were replaced at various parks, replacing 152-1500w quartz fixtures with 1000w metal halide fixtures; and 12-500w quartz fixtures with 8-250w metal halide ones for a total savings of 160KW.
*FY1999 - At MRO, Saddlebrook Police, Brookside Nature Center, Shady Grove facility a total of 157-40w fixtures were replaced with 32 T8 electronic ballast lights for a total savings of 6.6KW.
*FY1999 - At Olney Manor Recreational Park-mercury lamps were replaced with high-pressure sodium at fifty multi-purpose/tennis courts, two walkways and one driving range. In general poles with 4-1500w mercury fixtures were replaced with 2-1000w metal halide fixtures.
*FY1999 - Ballfield lights were replaced at Cabin John and Wheaton Regional Parks and newly installed at Blair and Blake High Schools using metal halide instead of mercury fixtures, resulting in better quality lighting at half the wattage.
*FY2001 - At MRO, Saddlebrook and Needwood boathouse installed new energy efficient fixtures.
*FY2002 - At Black Hill Visitor Center, Stoneybrook and Glenmont Recreation Centers, Wheaton Tennis Bubble, Meadowbrook Maintenance and Woodlawn barn new, more energy efficient fixtures and lamps replaced existing fixtures.
*All years - Numerous miscellaneous smaller projects at various facilities.

HVAC

*FY1998/1999-HVAC systems were replaced for efficiency and energy savings at fourteen facilities: Recreational centers at Indian Springs, Colesville, KenGar, Argyle, Hillandale, Lynnbrook, Kemp Mill, Norbeck, Randolph Hills, Sligo Dennis, Glenmont and Stoneybrook and Little Bennett Maintenance and Rockwood Conference Center. After installation the gas consumption was reduced by 8.5% after taking into account the degree-days and the electricity consumption was reduced by 20.0%.
*FY2001- Replaced two package roof top units with more energy efficient unit at Saddlebrook Police.
*FY2002- Replaced three furnaces, air conditioning units with more energy efficient units at Rockwood Manor Conference Center.
*FY2002-Meadowbrook Maintenance- Replaced Mammoth rooftop unit with two modular boilers with outdoor reset, air handler and air conditioning system.
*FY2003-A life cycle cost analysis was performed on an old 5-ton roof unit at the Montgomery Regional Office Building. The results dictated that the unit should be replaced. A new high efficiency roof top unit was installed serving a suite of offices.
*FY2003- A direct gas fired unit whose fuel consumption was very high had heated the Carpentry shop at the Wheaton Maintenance Facility. That system was replaced by high efficiency tube heaters with the result being better fuel economy and better comfort for the workers.
*All years-Numerous miscellaneous smaller projects at various facilities.

Plumbing/Building Envelopes

*Every year old fixtures at many facilities were replaced with new ones that have low water consumption, for an average saving of 30%. This is an on-going process as part of the Commission's Preventive Maintenance Program.
*Also every year various types of work were performed such as insulating walls and ceilings, installing insulated exterior and garage doors to provide a more energy efficient building.

Multiple Discipline

*FY2003-The Kengla House was completely renovated. Seven old window air conditioners were replaced with a high efficiency central air conditioning system and new ducts. The environmental system can now be adjusted to provide separate temperatures for the sleeping quarters, meeting area etc. All windows were replaced with low leakage, double pane, low E glass rating windows. All toilets were replaced with low consumption ones. All light fixtures were retrofitted for more energy efficiency. The work performed has made this house significantly more efficient. The end result, however, has been that more energy is being used because the facility is more attractive and comfortable and thus used more.
*FY2003-At the Needwood Golf Center, Central Maintenance completed the construction of a modern maintenance facility complete with service and administrative areas, storage sheds, and wash bay. This building replaced an old barn and cinder box building, As in the case of the Kengla House, energy use will increase because the old and new facilities are not comparable and now provide the proper space for workers to be able to do their work needed. The Service Area was heated by high efficiency radiant tube heating, and the Administrative Area, by 90+% natural gas furnace. The lighting wattage was reduced in the equipment storage areas.

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 05 (July 1, 2004 through June 30, 2005)

Measures - Planned: (for FY05)	projected completion date (mo/yr)	projected initial cost ($)	projected annual net impact on maintenance cost ($)	fuel type(s) effected and units	estimated units saved per year	projected annual cost savings ($)
Capital Improvement Projects:						
Selected Heat Pump and HVAC Roof-top Unit Replacements	June 2005	$37,000	$9,400 Annual Service Cost	Electricity	154,170 kWh	$9,250 Annual Cost Avoidance
Total		$37,000	$9,400			$9,250
Operations and Maintenance:						
Employee Training and Participation Program	January 2004 to 2005	$9,500	NA	Natural Gas, Propane, and Electricity	2,400 therms, 800 gallons and 200,000 kWh	$15,000 Annual Cost Avoidance
Temperature and Operations Control Program	January 2004 to 2005	$6,000	NA	Natural Gas, Propane, and Electricity	1,700 therms, 500 gallons and 134,000 kWh	$10,000 Annual Cost Avoidance
Un-occupied Cycle Controls Program	January 2004 to 2005	$3,000	NA	Natural Gas, and Electricity	2,300 therms and 134,000 kWh	$10,000 Annual Cost Avoidance
Cabin John Complex and Brookside Gardens Complex Operations and Maintenance Programs	January 2004 to 2005	$9,500	$5,000 Annual Service Cost	Natural Gas, and Electricity	3,400 therms and 200,000 kWh	$15,000 Annual Cost Avoidance
Total		$28,000	$5,000			$50,000
Description of Activities:						
See Energy Management Section						

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

FY2005 UTILITY PROJECTION REPORT

UTILITY	ACTUAL FY2003	BUDGET APPROVED FY2004	PROJECTED FY2004	PROJECTED FY2005
Electricity				
kwh	16,250,348	17,372,500	16,247,091	16,023,344
cost	$1,135,846	$1,390,906	$1,233,909	$1,307,000
unit	6.99c/kwh	8.01c/kwh	7.59c/kwh	8.16c/kwh
Natural Gas				
therms	502,785	348,390	441,679	433,760
cost	$377,939	$313,550	$441,679	$425,100
unit	75.2c/therm	90.0c/therm	100.0c/therm	98.0c/therm
Water/Sewer				
kgall	66,745	64,700	65,755	63,527
cost	$458,826	$434,800	$451,740	$449,800
unit	$6.87/kgall	$6.72/kgall	$6.87/kgall	$7.08/kgall
Propane				
gall	101,977	88,824	82,810	81,154
cost	$128,287	$75,500	$81,189	$77,100
unit	126.0c/gall	85.0c/gall	98.0c/gall	95.0c/gall
Total Cost	$2,100,898	$2,214,756	$2,208,517	$2,259,000

Unit costs for FY2005 are at or less than rates set by ICEUM.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

FY2005 UTILITY PROJECTION REPORT BY FUND/COST

FUND AND UTILITY TYPE	ACTUAL FY2003	BUDGET APPROVED FY2004	PROJECTED FY2004	PROJECTED FY2005
Administration				
electricity	$81,367	$82,500	$82,801	$85,000
natural gas	11,795	10,650	12,405	12,000
water/sewer	3,760	4,200	3,777	3,800
propane	-------	------	-------	------
Subtotal	$96,922	$97,350	$98,983	$100,800
Park				
electricity	$554,487	$760,706	$650,708	$700,800
natural gas	201,547	205,200	230,274	221,700
water/sewer	353,768	327,000	349,763	354,200
propane	78,009	42,000	48,789	46,600
Subtotal	$1,187,811	$1,334,906	$1,279,534	$1,323,300
Enterprise				
electricity	$485,528	$537,700	$490,400	$505,600
natural gas	161,473	93,200	194,500	187,600
water/sewer	100,251	94,100	88,700	89,700
propane	50,278	33,500	32,400	30,500
Subtotal	$797,530	$758,500	$806,000	$813,400
Property Management				
electricity	$14,464	$10,000	$10,000	$15,600
natural gas	3,124	4,500	4,500	3,800
water/sewer	1,047	9,500	9,500	2,100
propane	-----	-----	-----	------
Subtotal	$18,635	$24,000	$24,000	$21,500
Total				
electricity	$1,135,846	$1,390,906	$1,233,909	$1,307,000
natural gas	337,939	313,550	441,679	425,100
water/sewer	458,826	434,800	451,740	449,800
propane	128,287	75,500	81,189	77,100
Grand Total	$2,100,898	$2,214,756	$2,208,517	$2,259,000

FY 2005

Resource Conservation Plan

Montgomery County Public Schools

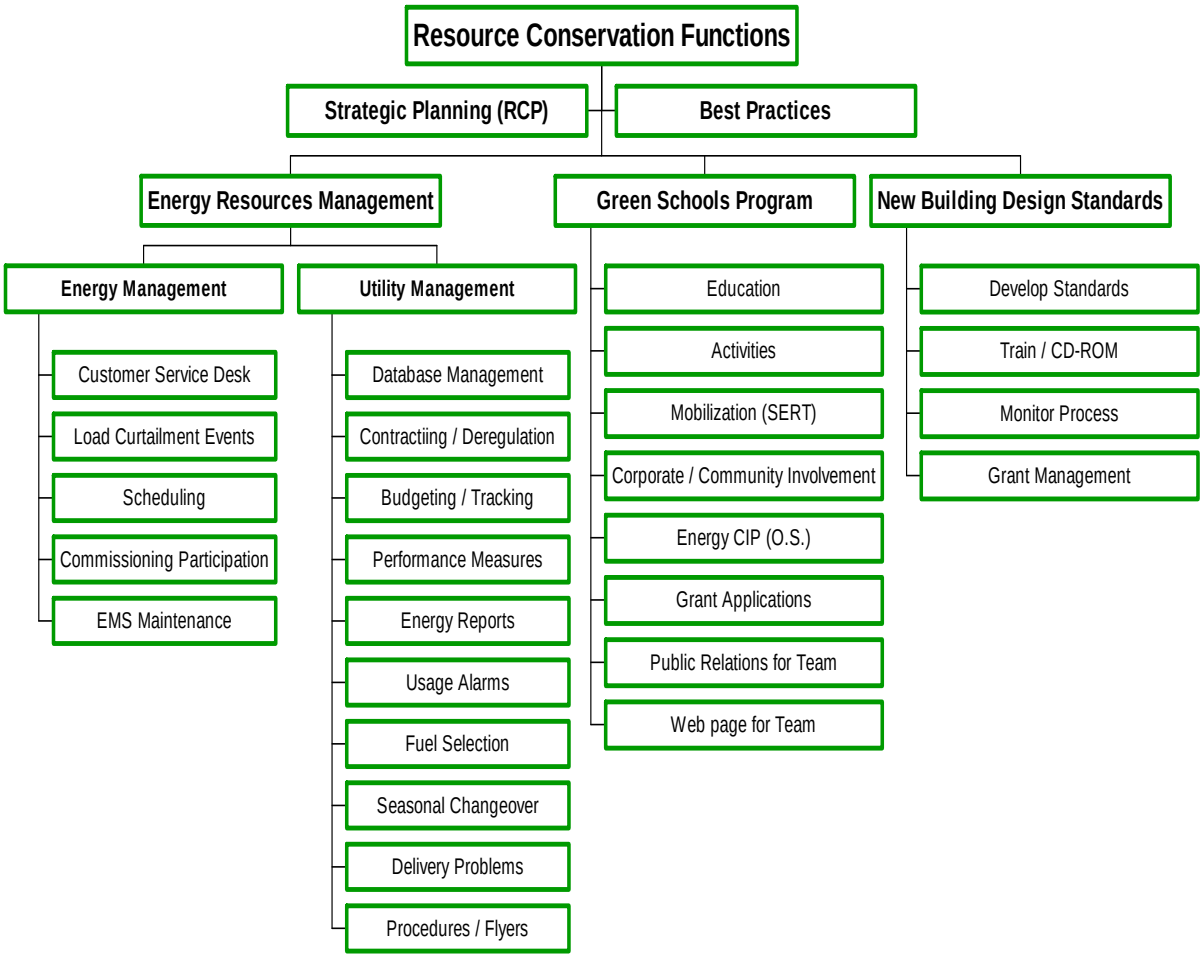
Maryland

Department of Facilities Management

November, 2003

Summary

Montgomery County Public Schools maintains a comprehensive program of energy conservation and utility management for its facilities. The following chart summarizes the many functional elements currently in place:



For additional information on these program initiatives, please visit our green schools website at:

http://www.mcps.k12.md.us/departments/facilities/greenschoolsfocus/

The MCPS ***Resource Conservation Plan*** follows a standardized reporting format suggested by the Montgomery County Department of Environmental Protection. Energy information is formatted in predefined tables for easy reference, and consistent tracking of data from year to year. The categories of information presented are: Facility Summary, New Measures, Existing Measures, and Planned Measures. An Innovations section lists significant "firsts" achieved over the past year, and an Appendix lists conservation policies and guidelines.

Resource Conservation Plan
FY 2005
Summary

The information on this page reflects the facilities owned or operated by this agency as of the end of FY 03 (June 30, 2003)

Agency	Montgomery County Public Schools		
Number of Facilities	217	Change in number of facilities	0
Total square feet	19,784,189	Change in total ft^2	116,090
Average operating hrs/year	2890	Change in avg. operating hrs/year	+50
Other changes affecting energy consumption	**Technology Modernization Initiative:** The Global Access program for educational technology adds approximately 21 schools per year to the MCPS wide area network. Each one thousand new computer workstations installed per year under this program increases MCPS plug loads by 150 kW, the energy equivalent of an average elementary school. **Portable classrooms**: Surging enrollment also drives the use of relocatable classrooms (portables). Portables grew by 140 units in FY 02, and by 57 in FY 03, reaching a total of over 600 by FY 04. Portables are electrically heated, and cost nearly 3 times as much per square foot to operate as permanent school facilities. The portables added in FY 02 and FY 03 alone equal the utility impact of five new middle schools. **Air-conditioning initiatives**: Through the Facility Air Conditioning Equity (FACE) program of the HVAC replacement CIP, air-conditioning systems were installed in 21 schools, resulting in essentially all schools now being fully air-conditioned. **Expanding summer use of schools:** As schools have become air conditioned the summertime use of schools has also expanded. MCPS uses schools for a growing number of summer programs, as do outside groups scheduled through the Community Use of Public Facilities. Annual operating hours and air-conditioning energy use are on the rise.		

Utilities:	units	total consumption (actual FY 03)	Percent change from actual FY 02	total cost (actual FY 03) $	Percent change from actual FY 02
Electricity	kWh	194,195,335	4%	$13,985,837	9%
Natural Gas (all)	therms	6,444,523	28%	$4,615,259	13%
Natural Gas (Irate)	therms		%	0	%
Fuel Oil #2	gallons	347,942	4%	$ 355,719	54%
Propane	gallons	39,950	11%	$50,932	68%
Water/Sewer	gallons	420,240,000	-2%	$ 1,851,077	3%
Total				$20,858,824	%

New Measures

The table “New Measures” lists and describes energy retrofit activities occurring in the current fiscal year.

In addition to the indicated retrofits, **new building design guidelines** generate substantial energy savings in each MCPS construction project. For example, the new Matsunaga Elementary School features a ground source heat pump HVAC system, and the planned Richard Montgomery High School replacement will have a similar system. Ground source heat pumps exchange heat with the earth through fields of closed-loop wells and reduce annual heating and cooling energy by 30% compared to conventional HVAC systems. New construction measures are not listed in this table due to the large number involved, and because the cost and benefits of these measures are integrated into the total building design.

Beyond energy conservation measures, MCPS seeks to be environmentally responsible in all aspect of new facility design. New MCPS facilities are rated by the U.S. Green Building Council for certification under the **Leadership in Energy and Environmental Design** (LEED) program. This program recognizes sustainable design in facility sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. MCPS seeks to attain a Silver Level rating on all future designs.

MCPS also controls utility costs through **joint procurement efforts of deregulated energy** supplies with other county and bi-county agencies. Joint procurement has produced significant utility savings for this group, including a six percent reduction in average electric rates.

New Measures

This table shows information on resource conservation measures implemented during FY 04 (July 1, 2003 through June 30, 2004)

Measures - New: (Implemented during FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) affected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Lighting retrofits	Various	$ 70,000	($ 3,500)	Elect (kWh)	200,000	$14,000
Internet Control of Portable Classrooms	2/04	$300,000	0	Elect (kWh)	3,600,000	$250,000
Waterless Urinals Pilot	12/03	$ 10,000	0	Water (Gal)	560,000	$ 4,000
Total		$380,000	($3,500)			$268,000
Operations and Maintenance:						
Information Unavailable						
Total						
Description of Activities:						

The "Internet Control of Portable Classrooms" is a first of its kind application of Carrier's "Broadcast Energy Savings" technology using Internet-communicating thermostats. The project was jointly developed by MCPS and the Applications division of Carrier Electronics. The Internet interface allows us to synchronize the heating and cooling schedules and setpoints at all portables and meet MCPS energy policy standards. The savings for this project is high because portables originally contain only manual thermostats, and run essentially uncontrolled. The use of conventional programmable (but non-communicating) thermostats is impractical in this application because of the large number of locations involved (over 600); going to each site even once a year to verify the programs would require a prohibitive amount of staff time. The interface also supports a 24-hour override to a setback temperature, i.e., a "snowday" command, allowing us to shut down portables, and save additional energy, whenever the opportunity arises. The newly developed Internet communicating thermostats make it feasible for the first time to efficiently control very large numbers of small, randomly located buildings, and with a payback of a little over one year.

Waterless Urinals: Urinals are being tested that use no water for flushing, while improving sanitation and reducing restroom odors. Between one and three schools will be tested this year, with an expected payback of two to three years. If successful, this technology will be applied to 50 restrooms scheduled for renovation under a separate CIP project.

Operations and Maintenance: As a policy, Maintenance uses high-efficiency replacement equipment when replacing failed equipment in facilities. The incremental cost for efficiency is small at the point of equipment replacement and not recorded.

Existing Measures

MCPS has made significant investments in energy conservation going back to 1980. The table “Existing Measures” focuses on only the past six years of recent projects.

Since 1991 MCPS has also maintained a program of behavioral education to reduce energy use by facility users. The original School Eco-Response Teams (SERT) program (1991), and the more comprehensive Green Schools Focus (2002), continually promote and reward a culture of conservation in the school system. These programs communicate with the schools through newsletters, curriculum modules, informational flyers, email, websites, a telephone hot line and site visits. As rewards for participation the programs offer project grants, annual cash awards, contest prizes, publicity, and application for national Earth Apple Awards. These programs produce hundreds of thousands of dollars a year in utility savings for the school system, and instill a conservation ethic for natural resources with students.

Existing Measures

This table shows information on resource conservation measures implemented prior to FY 04

Measures - Existing: (implemented from FY 98 to FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) affected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Lighting Retrofits	01/98	$ 644,633	($25,325)	Elect kWh	2,992,939	$209,506
Lighting Retrofits	01/99	$ 467,748	($18,376)	Elect kWh	2,171,687	$152,018
Lighting Retrofits	01/00	$ 241,693	($ 9,495)	Elect kWh	1,122,147	$ 78,550
Lighting Retrofits	01/01	$ 193,471	($ 7,601)	Elect kWh	898,259	$ 62,878
Lighting Retrofits	01/02	$1,544,630	($60,682)	Elect kWh	7,171,498	$502,005
Lighting Retrofits	01/03	$ 237,000	($ 9,377)	Elect kWh	635,496	$ 54,485
EMS Upgrades	01/03	$ 161,000	0	Elect kWh	442,000	$ 31,800
				NGTherms	18,500	$ 15,200
Cooling Tower Water Monitors	01/03	$ 65,000	($15,000)	Water Gallons	2,800,000	$ 12,000
Total		$3,555,175				$1,118,442
Operations and Maintenance:						
Information Unavailable						
Total						
Description of Activities:						

MCPS comprehensive lighting retrofits affect every lighting fixture in the building. Fluorescent fixtures receive T8 lamps and electronic ballasts, 400-Watt Mercury Vapor fixtures are replaced with 250-Watt Metal Halide fixtures (with improved light output), incandescent fixtures are changed to compact fluorescent, and incandescent EXIT signs are changed to LED type. LED EXIT's consume only 5 Watts and never burn out, thus also improving the safety of the facilities.

Cooling Tower Water Monitors detect excess water flow through cooling towers, caused by malfunctioning controls, and alert maintenance staff. The monitors send a pager signal to the responsible person, including the type of alarm and the facility number. Monitors were installed on 92 cooling towers owned by MCPS, averting water losses of hundreds of thousands of gallons per year.

Operations and Maintenance: As a policy, Maintenance uses high-efficiency replacement equipment when replacing failed equipment in facilities. The incremental cost for efficiency is small at the point of equipment replacement and not recorded.

Planned Measures

A significant backlog of profitable energy projects exists in MCPS, for energy management, lighting and water conservation measures. The table “Planned Measures” reflects the projects that could feasibly and profitably be implemented in the coming fiscal year.

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 05 (July 1, 2004 through June 30, 2005)

Measures - Planned: (for FY05)	projected completion date (mo/yr)	projected initial cost ($)	projected annual net impact on maintenance cost ($)	fuel type(s) affected and units	estimated units saved per year	projected annual cost savings ($)
Capital Improvement Projects:						
EMS Upgrades	03/05	$ 355,000	$0	NG Therms	31,300	$31,000
				Elect kWh	971,000	$68,000
Lighting Retrofit of CESC	03/05	$ 145,000	($5,000)	Elect kWh	543,000	$38,000
Total		$500,000	-5,000			$137,000
Operations and Maintenance:						
Information Unavailable						
Total						
Description of Activities:						

The above project list is contingent on increased funding requested in the FY 05 to 10 Energy CIP.

Energy Management Upgrades: The infrastructure of energy management systems at MCPS has reached an age where many systems need to be replaced or upgraded. Advances in electronics and communications now enable deeper savings from energy management systems than previously possible. Also, new network interface standards can now distribute real-time EMS data instantly to widely distributed facility users and staff. Access to building automation data across the Wide Area Network multiplies the value of energy management systems well beyond the simple energy savings shown above. These and other strategic improvements can be made during the systematic EMS upgrade initiative.

Operations and Maintenance: As a policy, Maintenance uses high-efficiency replacement equipment when replacing failed equipment in facilities. The incremental cost for efficiency is small at the point of equipment replacement and not recorded.

FY 02 and FY 03 Significant Technology and Program Advances of MCPS in Energy and Utility Management

1) First use of **Internet-communicating thermostats** to control distributed spaces, including:

   a. First remote control of HVAC in a portable classroom

2) First use of **MCPS Ethernet connection** to continuously communicate with remote building automation systems, in lieu of an intermittent dial-up connection.

3) First deployment of a **Web interface** to view real-time building information.

   a. Fourteen schools now "on-line"; viewing information is accessible to anyone on the MCPS wide area network through a web browser

4) First direct network access of the Energy Resource Team to the new **automated work order system**, Maximo, to enter work requests and retrieve work histories.

5) First use of Maximo to dynamically update a **Web page with current HVAC** operational status of all schools during changeover periods.

6) First use of a **Web-based system to monitor daily electric profiles** in buildings and detect abnormal use patterns, control and scheduling problems.

   a. 49 sites are installed under the PEPCO "CEO Online" subscription program.

   b. A pilot project is testing a similar but less expensive approach completely owned by MCPS.

7) MCPS helped to organize and participated in first locally-sponsored seminar to train local government Construction staff in **Leadership in Energy and Environmental Design (LEED) criteria** of the U.S. Green Building Council, including;

   a. First grant from the Maryland Energy Administration.

8) First "**Green School Design Charrette**" to green the design of an upcoming school.

   a. Two-day event with 60 participants, including broad participation from MCPS departments and prominent experts in sustainable design

9) First group of existing schools to enter an **MCPS "Green Schools" program**, administered by ERT staff and modeled on the national Green Schools program of the Alliance to Energy:

   a. Ten secondary schools have received training, including sessions on an **investigation-based approach** for energy and environmental activities and

   b. Use of specially-provided instrument **Toolkits,** and

   c. Energy-related **curriculum** materials and support.

10) First deployment of an **automated phone system** for the Energy Resource Team, including;

   a. Automatic Call Distribution, call queuing and voice mail boxes for specific service requests

   b. Call origin, path, time and termination data collection and reports

   c. Installation of a T1 digital phone line to replace 16 Centrex lines and reduce overall monthly service fees

11) First MCPS use of the **automated scheduling database** operated by the ICB / Community Use of Public Facilities program, to receive HVAC scheduling requests from three school clusters, in lieu of paper calendars manually filled out by school staff:

   a. This pilot project is being extended to an additional six school clusters in FY 04.

12) First use of **grant funding** from the federal "**Aging Schools Program**" and state "**Qualified Zone Academy Bonds**" program to conduct energy conservation lighting retrofits in schools:

   a. Four schools and $282,000 awarded

13) First **Retro-Commissioning** of MCPS facilities that omitted commissioning during construction or renovations (three facilities).

14) First MCPS school opened with a **Geoexchange system** for heating and cooling:

   a. Matsunaga Elementary School and Longview Center, 125,000 square feet

Appendix – Montgomery County Public Schools

Resource Conservation Policy and Guidelines

- BOE Policy On Energy Conservation
- Electricity Guidelines
- Heating Guidelines
- Food Preparation Guidelines
- Water Use Guidelines

POLICY BOARD OF EDUCATION OF MONTGOMERY COUNTY

Related Entries: ECM, ECM-RA
Responsible Office: Supportive Services

Energy Conservation

A. PURPOSE

To ensure that Montgomery County Public Schools pursues energy conservation efforts and practices that continue to preserve our natural resources while providing a safe and comfortable learning environment for all staff and students

B. ISSUE

The nation is experiencing a depletion of its natural resources which include crude oil, natural gas, and other energy sources. The Montgomery County Public Schools is committed to reducing its consumption of natural resources and still improving the quality of its educational programs. The Montgomery County Board of Education desires to work with other agencies of government and plan school system activities so that the learning environment of essential education programs are not curtailed or compromised.

C. POSITION

1. The superintendent of schools shall continue to establish procedures to ensure the conservation of natural resources by personnel at all levels of the school system, which shall include the following practices:
    a) Generation of a systemwide resource conservation plan that outlines goals and objectives
    b) Development of acceptable energy conservation guidelines as outlined in the resource conservation plan
    c) Continued development and implementation of conservation programs
    d) Performance of energy studies on all new MCPS construction

e) Monitoring the general operation and maintenance of all heating, ventilation and air-conditioning equipment

f) Procurement and consumption management of fossil fuels and electricity

g) Continuing reminders to staff and students of the need for conservation of all natural resources

2. MCPS will participate in a coordinated effort by government authorities to establish appropriate resource conservation plans and utility price monitoring systems to ensure that public schools have adequate supplies of essential fuels and can obtain these at the best possible prices.

D. DESIRED OUTCOME

Create a healthy and comfortable learning environment while controlling energy consumption more efficiently and diverting the otherwise rising utility costs towards educational programs. Continue development of energy conservation efforts that proportionally reduces energy consumption in new and existing facilities.

E. IMPLEMENTATION STRATEGIES

1. Should natural resources be insufficient to meet normal operating needs, the superintendent will develop further plans for the consideration of the Board of Education to conserve energy.
2. Copies of this policy and the annual resource conservation plan will be sent to appropriate school system and county government officials.

F. REVIEW AND REPORTING

This policy will be reviewed on an on-going basis in accordance with the Board of Education's policy review process.

Policy History: Adopted by Resolution No. 654-73, November 13, 1973; amended by Resolution No. 285-97, May 13, 1997.

Electricity

1. **Computers**: Turning off computers not in use is important. The computers in each school now consume more energy than lighting. Special attention should be given to turning off all computers after school hours, including evenings, weekends, holidays, and summer break. Network administrators should employ network software to control computer operations and set all computers to "sleep" mode after school hours. Use of flat panel display monitors is encouraged. Flat panel monitors use 70% less energy, and can reduce excessive heat build-up in computer labs and closets.

2. **Lights** in classrooms should be turned off when not in use even for a few minutes. Every effort should be made to avoid accidentally leaving lights on in storerooms, crawl spaces, attics, and other unoccupied spaces. Corridor lighting should be reduced in over-illuminated areas and turned off during unoccupied periods if it can be done without introducing a safety problem.

3. **Daylighting:** Window shades should be adjusted to make maximum use of natural lighting. Because most classroom lights are controlled by two or more switches, lights nearest the windows should be used only when daylight is not available.

5. **Parking lot lighting** of each building should be turned off at the close of the regular school day or evening activities. Building service managers should periodically check/reset the time clock for outside lighting.

6. **Cleaning Crews:** Building service staffs are to use lights only in areas where work is being done or in areas involving safety. The practice of lighting the entire building should not be allowed. HVAC systems should remain off during cleaning, except when ventilation is required for waxing or carpet cleaning activities.

7. **Personal electric space heaters** will not be permitted. Such units, in addition to having high energy consumption, are a fire and safety hazard. Only heaters furnished and installed by the Division of Maintenance for temporary emergency use will be permitted.

8. **Temperature Setpoint**: Maximum cooling level is 76 F. Media centers and computer labs should be set at 75 F.

Heating

1. **Temperature Setpoint**: The maximum heating level is 70 F. Set thermostats accordingly. Some temperature variation will occur as equipment cycles on and off. Report heating complaints only if the thermostat is set to 70 F and the measured temperature at the thermostat stays below 68 F.

2. **Hours**: During non-school hours, heat is furnished only for MCPS activities and user groups that have specifically contracted for heat, with a two-hour minimum. Consolidate necessary MCPS evening work into the minimum number of zones possible. HVAC is not provided for individuals to use a classroom or office outside of normal hours.

3. **Central Plant Operation:** In schools with multiple boilers, except where boilers heat a separate portion of the building(s), only one boiler should be activated, except in extended periods of cold weather when one boiler will not heat the building.

4. **Boiler Maintenance:** Fuel oil burners should be cleaned and tuned for optimum combustion twice yearly.

5. **Pumps:** Only one main heating pump should be operated, except where additional pumps are provided for separate zones. Do not operate main pump and standby pump at the same time.

6. **Unit Ventilators:** Maintain unit ventilators free of obstruction, such as books, plants, and furnishings, both on the top grill and at the bottom intake, so that air can circulate efficiently throughout the room.

7. **Infiltration Control:** All windows and outside doors will be kept closed when heating systems are in operation. Corridor doors will remain closed where possible. Inspect automatic door closers weekly.

8. **Storage Spaces:** Close unused storage rooms and set thermostat controls, where installed, to the lowest possible temperature setting that will prevent freezing.

9. **Personal electric space heaters** will not be permitted. Such units, in addition to having high energy consumption, are a fire and safety hazard. Only heaters furnished and installed by the Division of Maintenance for temporary emergency use will be permitted.

Food Preparation

Cooking Equipment

1. Preheat only equipment to be used ... just before using.
2. Reduce temperature or turn equipment off during slack periods.
3. Cook full loads on every cooking cycle ... when possible.
4. Use the correct size equipment for all operations.
5. Avoid slow loading and unloading of ovens and opening doors unnecessarily.
6. Keep equipment clean for efficient operation.

Hot Food Holding and Transporting

1. Preheat equipment before loading.
2. Always use at full capacity ... when possible.
3. Clean thoroughly daily.

Refrigeration Equipment

1. Keep doors tightly closed and avoid frequent or prolonged opening.
2. Place foods in refrigerator or freezer immediately upon arrival from supplier.
3. Keep evaporator coils free of excessive frost.
4. Keep condenser coils free of dust, lint or obstructions.

Warewashing Equipment

1. Always operate equipment at full capacity ... when possible.
2. Flush after heavy meal periods--clean thoroughly, daily.

Water Heating

1. Repair leaking faucets as soon as possible.
2. Reduce temperature where possible.
3. Insulate hot water pipes.

Ventilating System

1. Use only the number of fans necessary at all times to provide adequate ventilation.
2. Turn fans off upon completion of cooking.
3. Operate two-speed fans on the lower speed ... when possible.
4. Keep filters and extractors clean.

RESOURCE CONSERVATION GUIDELINES

WATER USE

GENERAL

1. **Be alert for water leaks** and water main breaks. Look for continuous water flow through the water meter, ponding of water around the building, and report leaks to maintenance immediately. A broken water main can release tens of thousands of dollars in water a week until it is repaired.
2. **Water is an MCPS resource and not to be given away** or used by outsiders. Do not provide free water to road maintenance tankers, or any other non-MCPS agency.
3. Do not allow local residents to use school hose bibbs or to control irrigation.
4. Car washes may **not** use school water supplies.
5. The utility budget pays for bottled water only in elementary school portables classrooms.

IRRIGATION

There are many factors that are important to successful irrigation - turf type, soil conditions, and daily situational climate. These general guidelines are supplied for the education of individuals operating turf irrigation equipment to help with the successful management of healthy turf.

1. **Excess watering can cause severe damage to turf**. Excessive watering promotes fungal growth and prevents the development of long, deep root systems needed for healthy turf.

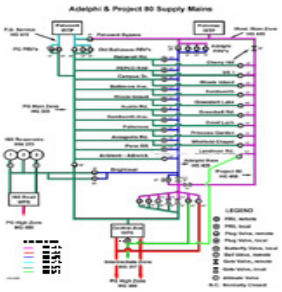
2. **Irrigate only in early morning or late evening hours**. This timing minimizes evaporation to the air.

3. **Irrigate only two or three times a week**. This interval promotes deeper root growth, which establishes healthier and sturdier turf.

4. **Do not over-water.** Excess water in the root zone reduces oxygen in the areas around the roots. Any pooling or runoff is over-saturation of the turf. If you don't have a timer system, never leave irrigation unattended.

5. **With timer systems, check zones for proper saturation levels.** Make sure water saturates the root zone, but beware of over-watering. Make sure timer systems are turned off when it rains. The installation of rain switches on automated irrigation systems is highly recommended.

WASHINGTON SUBURBAN SANITARY COMMISSION



Resource Conservation Plan- FY'05

Prepared by Rob Taylor, Energy Manager
The Production Team

January 2004

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

Summary

The information on this page reflects the facilities owned or operated by WSSC as of the end of FY 03 (June 30, 2003)

Agency	Washington Suburban Sanitary Commission (WSSC)		
Number of Facilities	201	Change in Number of Facilities	+1
Total Ft^2	N/A	Change in Total Ft^2	N/A
Average Operating Hrs/Yr.	N/A	Change in Avg. Operating Hrs/Yr.	N/A
Other Changes Effecting Energy Consumption	See narrative		

Utilities:	Units	Total Consumption (Actual FY 03)	Percent Change from Actual FY 02	Total Cost $ (Actual FY 03)	Percent Change from Actual FY 02
Electricity	kWh	209,940,489	+2 %	$10,950,875	+9 %
Natural Gas (firm)	therms	275,684	+25 %	$223,519	-21 %
Natural Gas (Irate)	therms	359,585	-2 %	$194,698	+7 %
Fuel Oil #2	gallons	54,131	+33 %	$48,718	+48 %
Propane	gallons	4,500	+20 %	$4,900	+25 %
Diesel Fuel	gallons	6,727	+68 %	$6,227	-4 %
Water/Sewer	gallons	N/A	N/A %	N/A	N/A %
Total				$11,428,937	+2 %

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

New Measures

This table shows information on resource conservation measures implemented during FY 04
(July 1, 2003 through June 30, 2004)

Measures - New: (Implemented During FY 04)	Date Implemented (Mo./Yr.)	Initial Cost ($)	Annual Net Impact on Maintenance Cost ($)	Fuel Type(s) Effected and Units	Units Saved Per Year	Annual Cost Savings ($)
Capital Improvement Projects:						
Pump Turbine Utilization (Rocky Gorge)	7/03-present	$0	$0	Electric	3,130,000 kWh	$157,000
Aggregated Electric Supply Procurement- Pepco accounts	7/03- present	$0	$0	Electric	0	$200,000
Energy Performance Project- Phase IIA- Western Branch & Parkway FBD (partially completed)	11/03	$2,000,000	$0	Electric	4,000,000 kWh	$200,000
Total		$2,000,000			7,130,000	$557,000
Operations and Maintenance:						
Total, O&M		$0			0	$0
Page Total		$2,000,000			7,130,000	$556,500
Description of Activities:						
See narrative						

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

Existing Measures

This table shows information on resource conservation measures implemented prior to FY 04

Measures - Existing: (implemented from FY 98 to FY 04)	Date Implemented (Mo./Yr.)	Initial Cost ($)	Annual Net Impact On Maintenance cost ($)	Fuel Type(s) Effected And Units	Units Saved Per Year	Annual Cost Savings ($)
Capital Improvement Projects:						
Variable Frequency Drives	FY 01-03	$250,000		Electric	1,000,000 kWh	$50,000
					1000 kW	$50,000
Total, CIP						$100,000
Operations and Maintenance:						
Load Curtailment	FY 98-03	$0		Electric	3,000 kW	$100,000
Pump Turbine Utilization (Rocky Gorge)	FY 98-04	$0		Electric	2,000,000 kWh	$100,000
Aggregated Electric Supply Procurement- Pepco accounts	FY 00-03	$0		Electric	0	$150,000
Total, O&M						$350,000
Page Total						$450,000
Description of Activities:						
See narrative						

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 05 (July 1, 2004 through June 30, 2005)

Measures Planned: (For FY05)	Projected Completion Date (Mo./Yr.)	Projected Initial Cost ($)	Projected Annual Net Impact On Maintenance Cost ($)	Fuel Type(s) Effected And Units	Estimated Units Saved Per Year	Projected Annual Cost Savings ($)
Capital Improvement Projects:						
Energy Performance Project- Phase IIA- (to completion)	2/05	$7,800,000	$0	Electric	4,000,000 kWh	$200,000
					5,000 kW	$100,000
					470 Tons Lime	$30,000
					4000 Wet tons sludge	$70,000
Piscataway Dewatering Plant	7/04	$6,500,000				$100,000
Total, CIP						$500,000
Operations and Maintenance:						
Energy Performance Project- Phase IIC- Electric Supply/Supply Mgmt.					0	$500,000
					2000 kW	$50,000
Total, O&M						$550,000
Page Total						$950,000
Description of Activities:						
See narrative						

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

ENERGY MANAGEMENT MISSION:

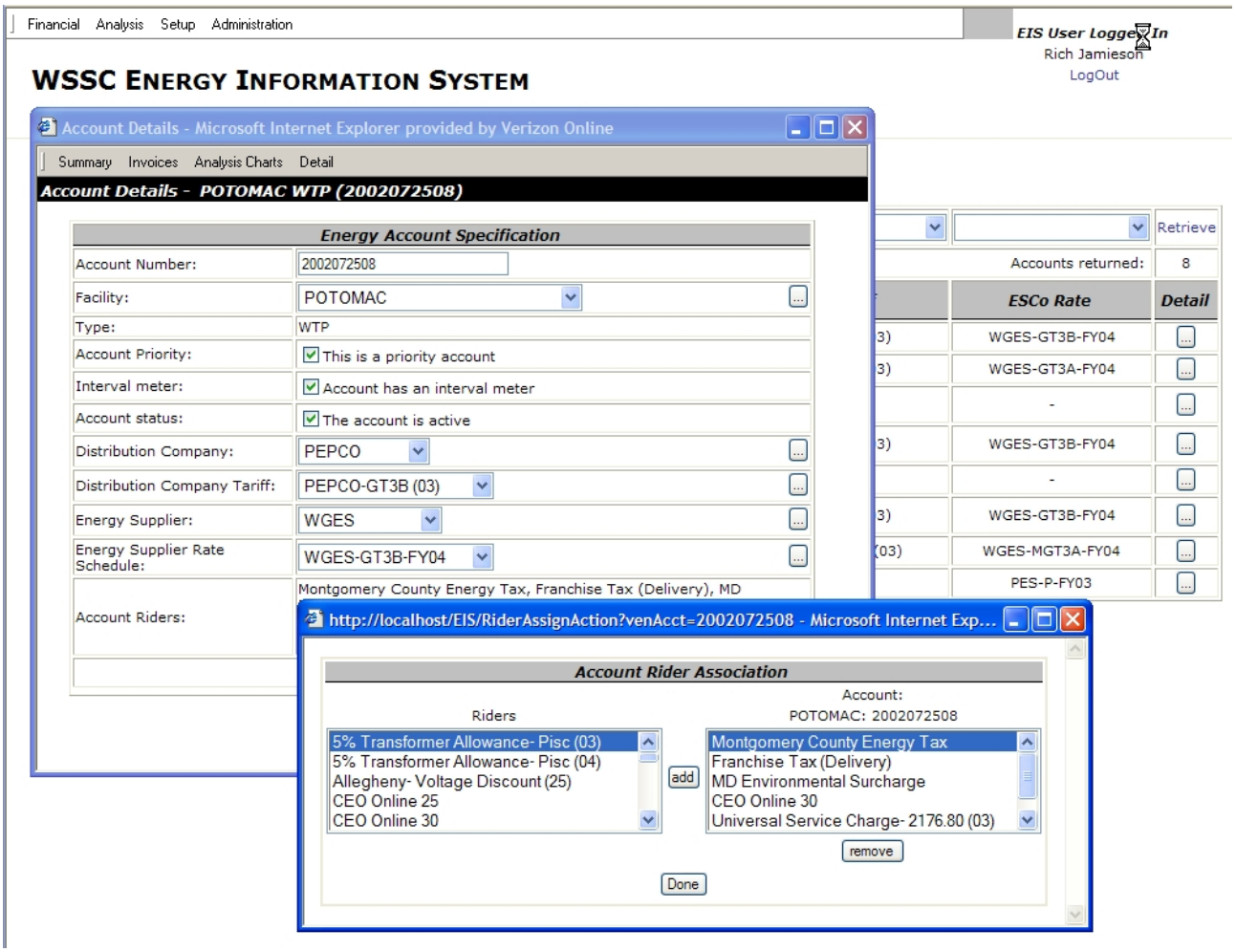
Our mission is to optimize the usage, reliability, and cost of electricity, natural gas, fuel oil, propane, and diesel fuel in conjunction with maintaining or improving the quality of operation and maintenance of all water/wastewater treatment plants, pumping stations, storage sites and field offices owned or managed by the Commission.

MAJOR INITIATIVES:

1) Energy Information System (EIS)- 1st phase

Initiated in 2001, temporarily shelved in 2002, and resurrected in 2003, the internal development of an Intranet-based energy billing and tracking system is finally on track with the completion of the first phase of the system in December 2003. First phase capabilities include the calculation of energy costs based on energy meter reading components (such as kWh, kW, therms, etc.), utility tariffs, supply contract prices, riders/surcharges, and verification of actual utility invoice amounts. The system has been de-bugged, tariffs, supply rates, and riders have been set up, and invoices for major as well as small summary billed accounts have been inputted into the system for FY'04. Cost, usage, and demand information should be available via WSSC's Intranet to all Plant Superintendents and Operations Group Leaders by 2/15/04. The system will also combine energy consumption and cost information with SCADA production data and calculate plant and site energy efficiencies on a monthly (billing cycle) basis. It will also allow for more effective and accurate load management and/or load curtailment and purchasing support.

Selected screen shots of the EIS are shown in the following three pages:


Financial Analysis Setup Administration
EIS User Logged In
Rich Jamieson
LogOut
WSSC ENERGY INFORMATION SYSTEM
Account Details - Microsoft Internet Explorer provided by Verizon Online
Summary Invoices Analysis Charts Detail
Account Details - POTOMAC WTP (2002072508)
Energy Account Specification
Account Number: 2002072508
Facility: POTOMAC
Type: WTP
Account Priority: This is a priority account
Interval meter: Account has an interval meter
Account status: The account is active
Distribution Company: PEPCO
Distribution Company Tariff: PEPCO-GT3B (03)
Energy Supplier: WGES
Energy Supplier Rate Schedule: WGES-GT3B-FY04
Account Riders: Montgomery County Energy Tax, Franchise Tax (Delivery), MD
Retrieve
Accounts returned: 8
ESCo Rate
Detail
WGES-GT3B-FY04
WGES-GT3A-FY04
WGES-GT3B-FY04
WGES-GT3B-FY04
WGES-MGT3A-FY04
PES-P-FY03
http://localhost/EIS/RiderAssignAction?venAcct=2002072508 - Microsoft Internet Exp...
Account Rider Association
Riders
Account:
POTOMAC: 2002072508
5% Transformer Allowance- Pisc (03)
5% Transformer Allowance- Pisc (04)
Allegheny- Voltage Discount (25)
CEO Online 25
CEO Online 30
add
Montgomery County Energy Tax
Franchise Tax (Delivery)
MD Environmental Surcharge
CEO Online 30
Universal Service Charge- 2176.80 (03)
remove
Done

Invoice Verification Detail - Microsoft Internet Explorer provided by Verizon Online

Detail Chart

Invoice Data

Site:	Acct Number		Distribution Co.	DistCo Tariff	ESCo Rate
POTOMAC	2002072508		PEPCO	PEPCO-GT3B (03)	WGES-GT3B-FY04
	Facility Type	Facility Num	Service From:	Service To:	Billing Date:
	WTP	1203	12/01/03	01/03/04	01/08/04

Description	Quantity	Units	Unit Cost	Calculated
Distribution Components - PEPCO-GT3B (03)				
Customer Charge	n/a	Monthly	$261.16	$261.16
kWh Charge: (D)	7,581,734	Total kWh	$0.002890	$21,911.21
On-Peak kW: (D)	11,520	On Peak kW	$0.000000	$0.00
max kW: (D)	11,520	Maximum kW	$0.392000	$4,515.84
Montgomery County Energy Tax	7,581,734	Total kWh	$0.008457	$64,117.97
Franchise Tax (Delivery)	7,581,734	Total kWh	$0.000620	$4,700.68
MD Environmental Surcharge	7,581,734	Total kWh	$0.000150	$1,137.26
CEO Online 30	n/a	Monthly	$30.00	$30.00
Universal Service Charge- 2176.80 (03)	n/a	Monthly	$2,176.80	$2,176.80
Generation Procurement Credit (.0016695)	7,581,734	Total kWh	($0.001670)	($12,657.70)
Gross Receipts Tax	n/a	Monthly	$0.020408	$663.79
			Subtotal: Distribution	$86,857.00
Transmission Components - WGES-GT3B-FY04				
			Subtotal: Transmission	$22,738.15
Generation Components - WGES-GT3B-FY04				
			Subtotal: Generation	$211,609.73
			Subtotal: Transmission & Generation	$234,347.88

Approve Amount: $321,105.82 ☑ Approved

Approve Date: 01/18/04

Comment: Discrepancy amount due to variation in calculation of Gross Receipts Tax, and Pepco undercalculation of MD

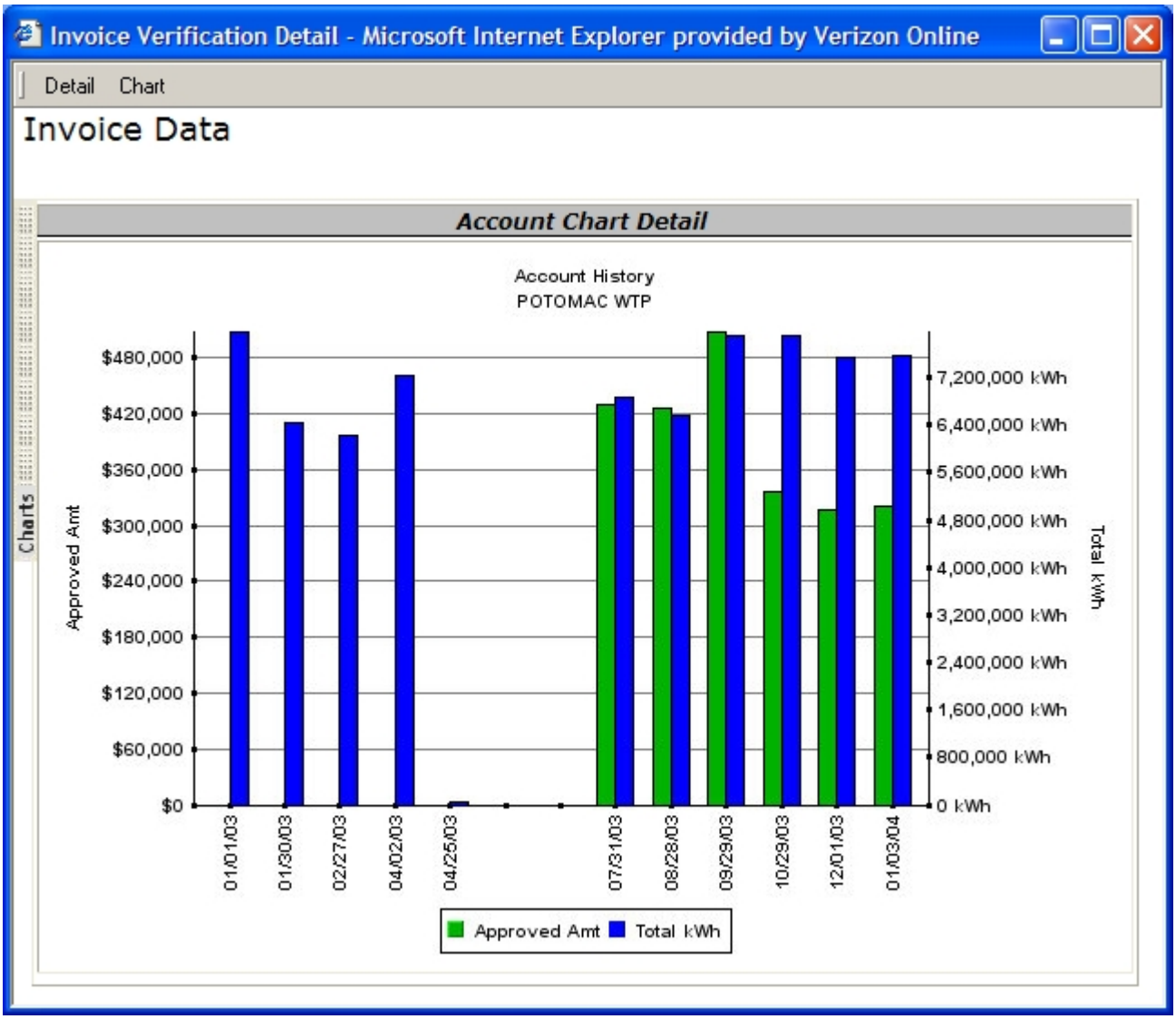
☑ Distribution ☐ Transmission ☐ Generation

View Selected | Summary | Detailed

Total Calculated Amount:	$321,204.88
Actual Invoice Amount:	$1,541,600.72
Discrepancy Amount:	$1,220,395.84

Save | Delete

Note: This invoice illustrates that Pepco did not bill this account for 4 months, then attempted to bill for the cumulative prior balance without backup. EIS calculated what the invoice amount should have been for the current month. We requested copies of missing invoices, and paid them separately.



Note: This chart shows that at the start of FY'04, WGES supply rates were converted to a % discount off Pepco SOS (July 2003). As a result, demand reductions in the following months translated into lower costs. The EIS system was not fully operational until July 2003, so totals prior to that date were not "approved" and the data is not consistent.

2) Real-time Energy Metering- EIS 2nd phase

The second phase of the EIS will be the linking of WSSC's major electric (billing) meters into our SCADA system, to enable plant superintendents, operators, and other supervisory personnel the ability to monitor power demand (kW) as it occurs and adjust equipment operations accordingly to optimize electricity cost. Currently, we have 15 main electric meters linked to SCADA; this will be tied to EIS so that invoice cost and consumption will be able to be verified immediately at the meter reading date. The information gathered will be used to select optimum supply pricing options, provide real-time demand aggregating, provide capability of on-site energy management, and verifying electric utility meter readings for faster and more accurate cost tracking. It is anticipated that this programming work will be accomplished under Phase IIB of the on-going Energy Performance Project, and implemented during FY'05-'06.

3) Energy Performance Project (energy audits and implementation of turnkey program of upgrades at all major WSSC sites).

a) Phase IA: Feasibility Study- Wastewater Treatment Plants, Wastewater Pumping Stations, RGHB (headquarters building), and Consolidated Lab.

Constellation Energy Source (CES) was awarded a contract in March 2000 to develop and implement a comprehensive energy savings program incorporating all major WSSC facilities, systems, equipment, and operations. CES had been prequalified through the State of Maryland's Department of General Services under its Energy Performance Contracting – Indefinite Delivery Contract (EPC-IDC). While a number of State agencies have used this contracting mechanism, WSSC became the first local or municipal government to sign a contract through the State's process. The State's EPC-IDC mechanism contains a piggybacking clause allowing political subdivisions to use the contract. Over the next 1-½ years, WSSC and CES worked together to collect equipment data, energy load profiles, consumption and cost information, and site visits to investigate potential energy conservation opportunities. The initial feasibility studies were conducted at WSSC's five major wastewater treatment plants, wastewater pumping stations, the Richard G. Hocevar Building (RGHB), and the Consolidated Laboratory. The results were presented, discussed and reviewed at bi-weekly meetings. Opportunities that are not feasible were removed from consideration. The remaining measures were further evaluated, providing WSSC with narrative descriptions, preliminary design (schematic diagrams, cut-sheets, etc.), estimated capital costs and projected savings. From this, a comprehensive list of energy conservation measures were developed which were packaged into a Phase IIA turnkey proposal, which included detailed design, construction, maintenance, monitoring & verification, and energy savings guarantee. Savings included energy and energy related operational cost savings from improved systems and procedures, reduced chemicals, contract maintenance, and sludge removal costs.

Specific areas investigated included:

- Evaluation of utilizing a 1000 kW abandoned generator at Site 2 (former biosolids composting) for back-up and peak shaving applications at an operational wastewater treatment plant or pumping station.
- Evaluation of the use of Fine Bubble Diffuser technology at Parkway and Western Branch Wastewater Treatment Plants (WWTP).
- Investigation of the feasibility of improvements to the Activated Sludge process at Western Branch WWTP.
- Evaluation of sludge incinerator efficiency improvements at Parkway WWTP.
- Evaluation of upgrades to the solids processing facilities at Parkway WWTP.
- Feasibility of converting constant speed AHU motors to variable speed drives at RGHB.
- Feasibility of more cost-effective use of air blowers at Piscataway WWTP.
- Coordination of recommended energy conservation measures with WSSC master plan, treatment plant and pumping station upgrades, environmental and security requirements.

b) *Phase IIA Design-Build-Maintain-Monitor-Savings Guarantee (under construction):*
Starting in January 2003 Constellation Energy Source (CES) began work on a $9.8 million capital energy efficient upgrade of aeration, solids handling, grit removal, peak shaving electric generation, HVAC modifications, and variable speed drives at Western Branch, Parkway, Piscataway, Damascus, and RGHB. This energy performance project is the first of its kind at WSSC, combining design, construction, monitoring, energy guarantee, and maintenance, into one project. The energy and energy related savings resulting from the installation - approximately $750,000/yr. - will provide the cash flow for 100% of the capital financing required over a 15-year period. CES and WSSC will monitor the performance of the new equipment to insure that the projected savings will be met. WSSC is receiving a low-interest (1.2%) loan from MDE for this project. Construction at the 5 sites included in the project will be completed in Feb 2005, with savings realized starting in FY'03.

c) *Phase IB (Feasibility study of water distribution system, remaining field offices, and backup/peak-shaving engine-generator systems):*

i) In March 2003, CES and their subconsultant O'Brien & Gere, began the investigation of all major WSSC water pumping stations, Potomac, and Patuxent water treatment plants, as well as selected wastewater pumping stations, with the goal of identifying potential energy efficient upgrades (similar to Phase IA). Phase IB will also include the study of all major field offices, electric peak shaving at Potomac/Patuxent and Seneca WWTP, and additional measures at Western Branch WWTP.

ii) A major component of Phase IB is the development of energy cost reduction options for water production and pumping. The water distribution system is served by WSSC's two water treatment plants utilizing different raw water sources, major transmission mains, 150 MG of distributed elevated and reservoir water storage, 18 pumping stations and 36 pressure reducing valves throughout Montgomery and Prince George's Counties geographical area. System components include a large number of control variables (36 valves and 18 pump stations). CES's subcontractor, the Beca Group, plans to utilize its

own Derceto software system, an online software tool, which automatically controls pumping and production to minimize costs and adapts to changing demand in real-time, continuously seeking to improve efficiency. Beca personnel have been analyzing WSSC SCADA data and meeting with WSSC Systems Control Group operators during the last six months to confirm the accuracy of their hydraulic model. This data will then be skeletonized into a working EPANET model suitable for use by Derceto.

iii) The 3rd major component of Phase IB is the pricing strategy for electricity procurement in 2004 and beyond. CES has analyzed WSSC's load profiles for our major electric accounts, and we are developing a) a block load purchase plan (for base load), supplemented by b) PJM real-time spot price purchase/sale over/under the block managed by CES. In this way, we will be able to mitigate risk by locking in 24/7 blocks at Internet auction bid rates, and take advantage of the relatively low spot market pricing (for most of the year). The Derceto Water Optimization System (mentioned above) should enable WSSC to further define the parameters of future blocks.

iv) The above energy conservation measures will be refined, developed in more detail, and packaged into a Phase IIB proposal, which will be presented to the Commission for approval. Based on the existing schedule, we expect an award and notice to proceed with the detailed design and construction by late summer 2004.

d) *Phase IIC (Electricity Supply and Active Supply Management):*

Since the award of the first Montgomery County aggregated electricity procurement in October 2000, CES and WSSC have identified, as a result of energy audits, analysis and load profiling conducted under the Energy Performance Project, significant opportunities to shift load via on-site power generation, use of allowable elevated water storage, greater use of flexible pumping schedules, without jeopardizing our operational and environmental mission. In addition to energy efficient equipment upgrades, CES has developed a program to further increase savings through sophisticated tools designed to optimize electricity supply costs while managing risk. The program is designed to control major energy consuming equipment based on market signals yielding savings greater than if supply pricing were isolated as a stand-alone function.

Purchasing initiatives supporting this program have been previously presented to the Montgomery Council MFP Committee through the Interagency Committee on Energy and Utility Management (ICEUM) Resource Conservation Plans and presentations in February 2002 (for FY'03) and February 2003 (for FY'04), and to the WSSC Commissioners in October 2003.

To take advantage of the new, more volatile energy market conditions and volatility as well as our ability to load major loads, WSSC decided in October 2003 to procure independently as part of our existing energy performance project. WSSC's commitment to procure 5% wind power as part of the Montgomery County RFEP has remained unchanged.

Key highlights of our procurement (under CES) include:

i) Purchase blocks of energy on the wholesale market at multiple times during the year. Most WSSC facilities run 24 hours/day with a fairly level usage rate. By purchasing blocks of kWh for our base loads, we can get cheaper unit prices due to lower supplier risk. By purchasing at multiple times during the year, we can manage risk by avoiding high prices and locking in for varied time periods during favorable markets. By taking bids and awarding within a very short period time window, we can insure competition and flexibility.

ii) Supplement blocks with PJM spot market energy. Our new water distribution optimization system will automatically adjust pump schedules based on PJM-LMP hourly prices. As we begin to see positive results of load shifting and become more comfortable with the operation of the system, we will increase the amount of spot purchases.

iii) Provide decisions and analysis of when to buy energy and capacity and how much, based on analysis of interval meter data, planned WSSC operations and ability to shift load, and market pricing conditions and forecasts. Assist WSSC in reduction of kW demand during peak rate setting periods conditions and WSSC projected operations. CES's efforts will incorporate equipment upgrades/control systems with new real time load management programs such as water system optimization and utilization of back-up generation.

4) Turbine Operation

Due to the significant amount of rainfall this year and the corresponding high water level at Rocky Gorge Reservoir (currently at normal level), the Rocky Gorge Water Pumping Station, pump turbines (700 HP each) ran a total of 5960 hours, saving $156,500 in electricity costs. The turbines are run in lieu of electric motors when the reservoir level permits. As a comparison, in FY'03, due to the low rainfall, the three turbines operated a total of only 570 hours avoiding $19,000 in electrical costs.

5) Load Curtailment

Due to the change in Pepco's load curtailment program in the summer of 2003 sponsored by the Pennsylvania-Jersey-Maryland (PJM) transmission grid, WSSC did not participate because the new program offered no cost saving incentives. In prior years with the former program, WSSC earned $100,000-$200,000/year in curtailment credits from Pepco. However, load curtailment will remain an important part of our peak shaving strategy, and will allow us to take advantage of multiple PJM programs. These efforts will be developed under our Energy Performance project mentioned above.

6) American Water Works Association Research Foundation (AWWARF) Study on Best Practices for Energy Management

The final AWWARF study report was issued in October 2003, recommending best practices for energy management: use of real-time electricity pricing, optimizing water distribution systems for energy efficiency, use of energy performance contracting, and measurement of energy management performance through the use of metrics and specific indices. WSSC participated with a study team consisting of 22 water and wastewater utilities in California, Florida, Ohio, Tennessee, Texas, and Nevada. As a result of the study, WSSC, East Bay Municipal Utility District (Oakland, California), Columbia (Georgia) Water Works and Las Vegas Valley Water Authority are implementing several major recommendations, either in-house or through the utilization of performance-based contractors.

WSSC has volunteered to take part in a new AWWARF study, "Development of a Utility Index to Assist in Benchmarking of Energy Management for Water and Wastewater Utilities". This benchmarking development project provides for the creation of a useful set of indices to track a water and/or wastewater utility's energy consumption and compare itself to similar organizations for the purpose of reducing energy usage and costs. The study is expected to begin in the May 2004, and be completed in late 2005.

FACTORS INFLUENCING ENERGY RATES- FY'05

1) Electrical Supply- BGE Schedule P Accounts:

BGE P accounts (Patuxent, Parkway, Rocky Gorge, RGHB) are presently supplied by Pepco Energy Services (PES) through the Montgomery County Aggregated Procurement Group contract. PES's contract expires in June 2004. WSSC procures GL and G accounts from BGE (standard offer); all existing BGE standard offer ("Price Freeze") service expires in June 2004 and will be replaced with Provider of Last Resort (POLR) pricing. Fixed option POLR pricing for large BGE Class 3 accounts (approximately 95% of WSSC's BGE account electricity consumption) will expire in May 2005.

All Pepco accounts are supplied by Washington Gas Energy Services (WGES) through the Montgomery County Aggregated Procurement Group contract. WGES's contract expires in June 2004. Pepco existing Standard Offer Service expires in June 2004, and will be replaced with Provider of Last Resort (POLR) pricing. Fixed option POLR pricing for large Pepco Class 3 accounts (approximately 93% of WSSC's Pepco account consumption) will expire in May 2005.

2) Pepco's Generation Procurement Credit (GPC):

The difference between what Pepco pays in advance for the electric supply it delivers to its customers and the Standard Offer Service price its customers pays are reflected in the GPC. In November 2003, the credit approved by the Maryland Public Services Commission was $.0016695/kWh, reflecting a decrease from last years credit of $.0023867/kWh. With Pepco's new Standard Offer (Provider of Last Resort) service, starting in June 2004, we expect that there will be no more credit, since Pepco will bid out this offering on a yearly basis. Therefore, our requested FY'05 budget reflects an increase of $300,000 to the expiration of this credit.

3) Montgomery County Energy Tax:

In July 2003, the Montgomery County Council authorized an increase in the Energy Tax from $.0028182/kWh to $.0084569/kWh. This is forecasted to increase our estimated FY'05 budget to increase by $500,000.

4) Electrical Supply: Allegheny And SMECO Accounts:

Standard Offers for Allegheny and SMECO accounts expire on 12/31/04. Repeated attempts to solicit bids on these accounts for the last three years have resulted in no bids, due to the extremely competitive rates offered from these utilities. For this reason, we expect to remain with the utility Standard Offers until expiration.

5) Natural Gas Supply- Firm And Interruptible Accounts:

WSSC and seven Montgomery County agencies (City of Gaithersburg, City of Rockville, Housing Opportunities Commission of Montgomery County, Maryland-National Capital Park and Planning Commission, Montgomery County Government, Montgomery County Public Schools, and Montgomery College) aggregated in 2001 to purchase natural gas through a joint contract with Washington Gas Energy Services. This has enabled WSSC to mitigate wild price fluctuations experienced in the spot market by locking in competitive rates on a yearly basis. However, due to lower drilling productivity, greater power plant demand and the rebounding U.S. economy, gas prices increased substantially by the end of FY'03 and are expected to remain high for the next 3-5 years. Our indexed (with the NYMEX futures market) contract with WGES allowed us to mitigate these price increases somewhat and float at monthly NYMEX rates and lock in at favorable market conditions. For FY'04 and continuing into FY'05, all ICEUM agencies are looking at gas prices approximately 50% higher than in FY'03.

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

OPERATIONAL CHANGES AFFECTING FY'05 (EXCLUDING ENERGY PERFORMANCE):

Project	Description	Cost Effect
Seneca WWTP Expansion	Existing 5-mgd plant will be expanded to 17-mgd, resulting in increased electrical demand and consumption. Liquids side fully operational; solids side undergoing startup and is expected to be in full operation by March 2004.	Increase $500,000/yr
Potomac WTP Solids Handling	New solids handling system was completed in October 2002; became fully operational in January 2003. Electrical consumption and demand will increase with the operation of new equipment.	Increase $120,000/yr
Piscataway Dewatering Facility	New, more energy efficient solids handling equipment will decrease electric consumption and demand.	Decrease $100,000/yr
Increase in Montgomery County Energy tax	Tripling of the Montgomery County Energy Tax will result in higher cost per unit of electricity consumption at all sites located in Montgomery County.	Increase $500,000/yr
End of Generation Procurement Credit (Pepco)	For the last year, Pepco has been able to buy electric supply for default service (Standard Offer Service) at a lower rate than buy-back arrangements made through electric de-regulation. However, this is expected to change (end) in FY'05 with an estimated wholesale supply price increase of approximately 15-20%.	Increase $300,000/yr
Wind Power Electricity Procurement	An estimated $.015/kWh premium for the purchasing of 5% wind power as mandated by Montgomery County as part of their aggregated electricity procurement.	Increase $150,000/yr

BASIS FOR ENERGY CONSUMPTION AND COST PROJECTIONS:

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

Energy consumption and cost projections are based on MOST FY'03 historical data and workload indices for the FY'05 Program/Budget.

Historical Data	FY '98 Act	FY '99 Act	FY '00 Act	FY '01 Act	FY '02 Act	FY '03 Act	FY '04 Proj	FY '05 Proj
Field Office (SF)	564,879	564,879	564,879	589,133	589,133	589,133	589,133	589,133
Water Treated (MG)	59,678	63,036	59,714	60,189	59,605	60,737	60,955	61,320
Water Pumped-Boosted (MG)	15,855	16,010	14,886	19,021	13,295	12,174	13,596	13,678
Waste Water Pumped (MG)	34,874	29,833	33,220	32,534	30,765	37,017	44,410	41,306
Waste Water Treated (MG)	18,310	16,932	18,852	18,866	17,270	20,486	24,930	25,236

Water Pumped, Treated, Waste Water Pumped, Treated:
Historical kWh/MG indices have been applied to projected flows to determine projected FY'05 kWh; kWh were adjusted for changes in efficiency and operational changes including the effect of Project 80; $/kWh expected rates for FY'05 were then applied to estimate total projected cost.

Field Offices:
Historical kWh/SF indices have been applied to projected SF to determine projected FY'05 kWh; kWh were adjusted for changes in efficiency; $/kWh expected rates for FY'05 were then applied to estimate total projected cost.

Dams, Wastewater Meter Valves, Pressure Reducing Valves and Storage Tanks:
Costs were projected based on previous years-actual data.

WASHINGTON SUBURBAN SANITARY COMMISSION
FY 2005
RESOURCE CONSERVATION PLAN

FY 2005 SUMMARY:
REQUESTED ENERGY (HEAT, LIGHT, AND POWER) BUDGET

Updated: 10/2/03

Energy Components:	***Requested***	
Electricity	$13,965,000	assumes 15% price increase over act FY'03
Natural Gas	$ 571,000	
Fuel Oil	$ 52,000	
Diesel Fuel (Engine Generators)	$ 20,000	
Propane	$ 4,000	
Sub-Total (before operational/other modifications):	$14,612,000	
Sub-Total (after operational/other changes- see below):	**$14,982,000**	

Operational & Other Changes Anticipated- FY'05

Piscataway Dewatering Facility (SMECO)	$ (100,000)
Potomac WTP Solids Handling (Pepco)	$ 120,000
EPC- Phase IIA Energy Savings	$ (600,000)
EPC- Phase IIB Energy Savings	$ -
End of Generation Procurement Credit (Pepco)	$ 300,000
Increase in Montgomery County Energy Tax	$ 500,000
Premium for 5% Wind Power (Mont. Co. Procurement)	$ 150,000
Total:	$ 370,000

Assumptions:
1) Energy Performance Contract: Phase IIA savings begin FY'05; Phase IIB savings begins FY'07
2) BGE Standard Offer for BGE tariffs G and GL expire in June 2004.
4) Allegheny, SMECO Standard Offers expire in December 2004.
5) Pepco Standard Offer expires in June 2004.

MONTGOMERY
COLLEGE

RESOURCE CONSERVATION PLAN

FY 2005

Takoma Park Health Sciences Center Opening January 2004

Prepared
By
The Office of Facilities
January 2004

EXECUTIVE SUMMARY

This Resource Conservation Plan (RCP) is prepared by the Montgomery College Office of Facilities, to support the College's FY 2005 Energy Management Capital Improvements Program (CIP) and Utility Operating Budget requests for funding.

This document describes the Montgomery College energy organization, discusses energy consumption, and summarizes resource conservation program accomplishments and plans. Tables present information on historical utility consumption and utility budget estimates. The Capital Improvements Program (CIP) Project Description Forms (PDF) that impact the College Energy Management are also contained in this document.

In FY 2004, the Energy Management Program focused on the energy efficient design of the Takoma Park Campus expansion. This includes the construction and commissioning of the new 100,000 Gross Square Foot(GSF) Heath Sciences Center(HSC) which will be opening in January 2004. The picture on the cover shows the 33 kW solar electricity array mounted on the HSC roof. The design of the Takoma Park Central Plant and the new 100,000 GSF, Takoma Park Student Services Center incorporate the latest in energy efficient technologies, construction will begin in early FY2005.

In FY 2004, the College again participated in the joint procurement of deregulated utility supplies of electricity and natural gas. In FY2005, 5% of the College's electricity will be generated from wind power. The College continues to implement and update Utility Master Plan recommendations on all three campuses. In FY 2004 the College became a member of the County sponsored Environmental Policy Implementation Task Force(EPITF) and assisted in the development of the Environmental Issues and Action Report.

Montgomery College is requesting $125,000 for the FY 2005 College Energy Management Capital Improvements Program(CIP) for various energy retrofits, and new energy programs. An additional $125,000 is requested for the FY 2005 operating budget that funds one energy staff position and other operating budget energy projects. This request is the same as in past fiscal years. The FY 2005 utility operating budget request is $2,816,000, a 1.1% increase over the FY 2004 request.

Montgomery College is dedicated to implementing and maintaining a life cycle cost-effective, low-risk energy management program. Although all energy conservation and environmentally friendly opportunities are considered, only those opportunities which are of the appropriate level of technology, have a high probability of success and meet the lowest net present value criteria will be implemented. To ensure that the Resource Conservation Program is operating as predicted, the appropriate databases are maintained. The goal of the program is to provide safe, comfortable, economical and environmentally friendly facilities, which will enhance the learning environment and contribute to student success at Montgomery College.

TABLE OF CONTENTS

GENERAL INFORMATION

Montgomery College was founded in 1946 and established its first campus in Takoma Park in 1950. Since then the College has grown rapidly, adding a second campus at Rockville in 1965 and a third campus in Germantown in 1976. The College operates a total of 46 buildings in excess of 1.7 million gross square feet (GSF), on the three campuses with additional off campus leased space. The buildings consist of classrooms, offices, laboratories, libraries, meeting rooms, gymnasiums, child care centers, natatoria and greenhouses. In addition to the programs offered at each campus, the College offers regular college credit programs and non-credit courses in off-campus locations throughout the County. Classes are held in campus facilities seven (7) days a week. The hours of use are generally from 7:00 a.m. until 11:00 p.m. on weekdays, and at various times during the day on Saturdays and Sundays. Some evening classes are held on Saturday or Sunday, but there are frequently intramural and varsity activities in the Physical Education buildings as well as community use (rentals) of other spaces on the weekends. The College's computer center is located on the Rockville Campus and is operational 24 hours a day. Classes are in session during the summer at all three campuses. The College's administrative and academic offices are open year-round. Central plants on the Rockville and Germantown campus distribute heating and cooling water for environmental conditioning of the spaces.

Montgomery College began its resource conservation program prior to the oil embargo in 1973, is a charter member of the Interagency Committee on Energy and Utility Management (ICEUM), and has submitted a Resource Conservation Plan in support of the utility operating budget since January 1976. The Office of Facilities is responsible implementing the Resource Conservation Plan. The College has been a member of the Electricity Deregulation Task Force, has participated with other agencies in the joint procurement of the Electricity Supply and is the lead agency for the joint procurement of natural gas supply. In FY2004, the College joined other County agencies in forming the Environmental Policy Implementation Task Force(EPITF) and assisted in producing the first Environmental Policy Issues and Action Report.

ENERGY & ENVIRONMENT ORGANIZATION

The Office of Facilities, under the direction of Mr. David J. Capp, provides college-wide support services for all three campuses and the central administration of the College, and is responsible for those activities associated with energy use, energy conservation planning, energy management and environmental issues. In February 1987, Montgomery College hired an Energy Manager who reports directly to the Chief Facilities Officer, and is responsible for implementing the energy components of the Resource Conservation Plan. See Figure 1.

Office of Facilities
Energy Organization Chart

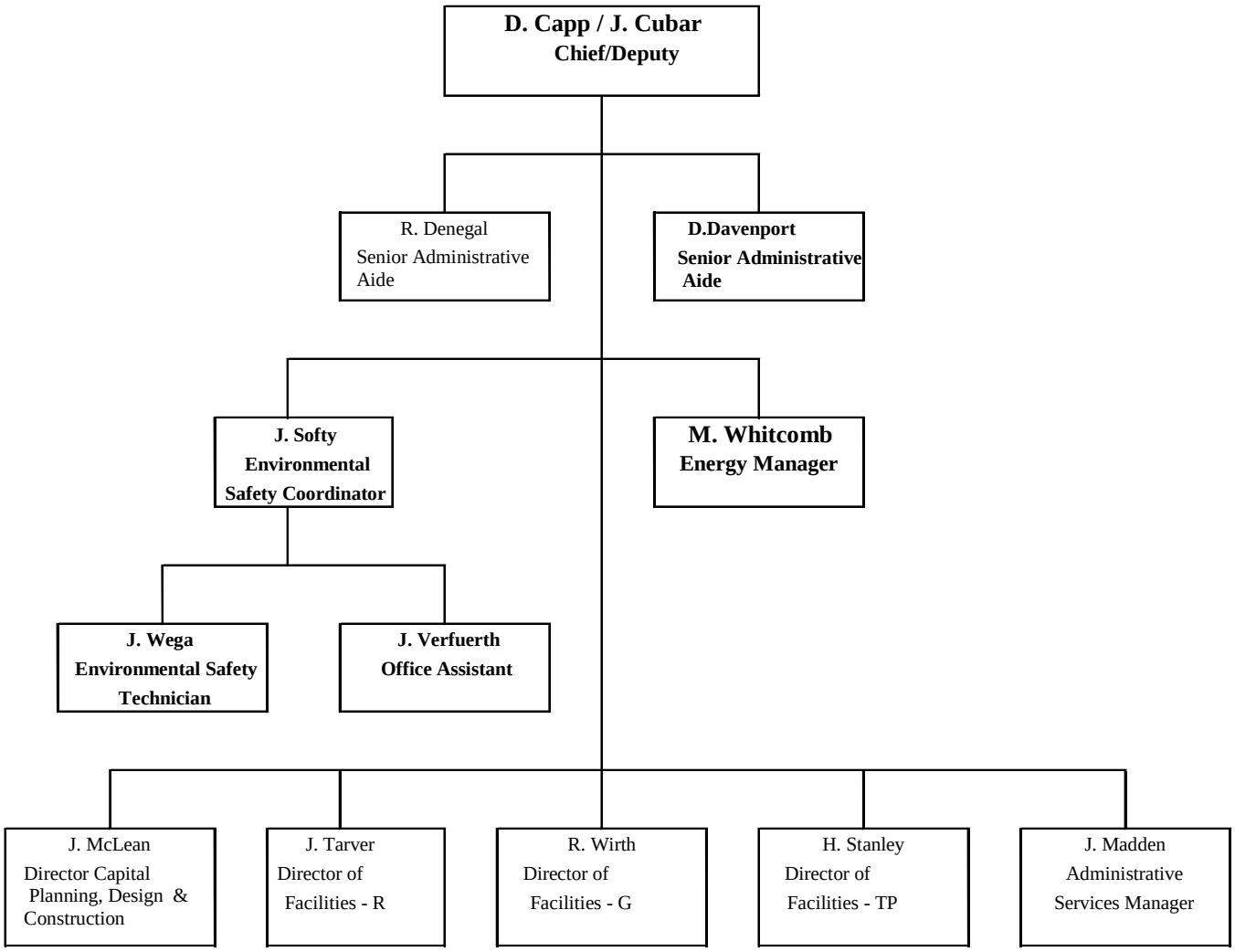


Figure 1

The Energy Manager coordinates energy efficient design of new and renovated buildings with the Director Capital Planning, Design and Construction, and coordinates energy audits, Utilities Master Plans and retrofits with the three Campus Directors for Physical Plant, and the Administrative Services Manager, Central Administration. The Energy Manager also coordinates with the Deputy Chief's, Senior Administrative Aide on matters relating to utility bills and the utility bill accounting database. In FY 2004, the College contracted consultant services to provide assistance with utility deregulation issues.

The College maintains a vehicle fleet to support the functions of the various College departments. In addition to road vehicles, the College maintains various vehicles such as mowers, tractors and powered carts. The Director of Facilities, Germantown is responsible for College-wide maintenance support of these vehicles and staffs an auto maintenance shop on that campus.

The Energy Manager represents the College on the Interagency Committee on Energy and Utility Management (ICEUM), is a member of the County Deregulation Task Force and represents the College as the lead agency in the procurement of natural gas supply for the County.

ICEUM MEMBER: Mr. J. Michael Whitcomb, P.E.
Energy Manager
Central Administration
Room 315
900 Hungerford Drive
Rockville, MD 20850

Phone No. (301) 251-7375.
Fax No. (301) 251-7379
e-mail: mike.whitcomb@montgomerycollege.edu

Mr. Whitcomb has been a member of the ICEUM committee, representing various county agencies since its formation in 1983. Mr. Whitcomb has served as the Interim Chairman of ICEUM, and is a former member of the Montgomery County Citizens Energy Conservation Advisory Committee (ECAC). Mr. Whitcomb is a Registered Professional Mechanical Engineer in the State of Maryland, a Certified Energy Manager and holds a B.S. in Mechanical Engineering and a Masters in Engineering from the University of Maryland.

In FY2004 the Montgomery County Government activated the Environmental Policy Implementation Policy Task Force(EPITF) which was approved by resolution by the Montgomery County Council. The goal of the task force is to provide interagency coordination and guidance on issues impacting the environment such as energy, transportation, recycling and hazardous waste. Mr. David Capp, Chief Facilities Officer is a member of the EPITF and is supported by Mr. Mike Whitcomb and Mr. John Softy who serve on the EPITF Technical Sub-committee. Mr. Softy is the College's Environmental Safety Coordinator, responsible for College-wide safety and environmental(hazardous waste management) issues.

The College's recycling program is coordinated at the by Mr. Robert Wirth, Director of Facilities, Germantown Campus and managed by each Campus Facilities Director. Mr. Wirth prepares the Annual Recycling Report.

Resource Conservation Plan
FY 2005
Summary

The information on this page reflects the facilities owned or operated
by this agency as of the end of FY 03 (June 30, 2003)

Agency	Montgomery College		
Number of Facilities	42 Owned 4 Leased 46 Total	Change in number of facilities	0
Total square feet	Gross 1,762,253 Net Assignable 1,057,197 Conditioned 1,392860	Change in total ft^2	+8,344
Average operating hrs/year	4600	Change in avg. operating hrs/year	+100
Other changes effecting energy consumption	1. **Information Technology:** Similar to other agencies, the College continues to expand its information technology capabilities. Most classrooms are being retrofitted with Smart Instructor Work Stations(SIWS) that include computers to control electronic audio and video multi-media presentation devices. Many traditional multi-purpose classrooms are being retrofitted with computer workstations to meet the "high tech" demands of the educational programs. A traditional classroom might consume 2-3 watts/sf while the newer energy intensive classrooms might consume 2-3 times that amount. New computer equipment is more efficient and complies with the EPA's Energy Star requirements. 2. **Expansion:** The College continues to expand to meet the demands of its educational programs and to meet the needs of its student population. In FY 2001, approximately 39,000 GSF was added and approximately 175,000 GSF was added in FY 2002, This is a 14% space increase. Additionally starting in FY 2000 approximately 8 properties were purchased for demolition in FY 2002 & 2003 for the Takoma Park Campus expansion. Between FY 2004 & FY 2006, approximately 250,000 GSF(+14%) will be added to the College on the Takoma Park Campus. New and renovated buildings are required to meet strict resource conservation and green building guidelines, using the latest life-cycle cost effective technologies. A 20 year College-wide Master Plan has been prepared and is being followed by a Utilities Master Plan in order to determine the most lifecycle cost effective means of providing utility infrastructure. 3. **Competitive Procurement of Utilities:** The College has joined with other County Government agencies and local municipalities to procure utilities. This has resulted in an approximately 7% savings on electricity generation and transmission compared to the Standard Offer Service(SOS) provided by the utility. The College has been the lead agency for the joint procurement of the supply of natural gas. Prices for fuel oil and natural gas have been volatile in the past several fiscal years. Changing suppliers requires additional staff and consultant hours for procurement and verification of bills. Approximately 10% additional man-hours are required for this effort.		

4. **New and Renovated Building Design:** The College continues to improve and refine the energy efficient design process to meet the requirements of the Montgomery County Code. The College has developed Energy Design Guidelines specifically tailored to the needs of the College's design and project management teams. All buildings undergo rigorous analysis during the design process which results in an estimated 40% reduction in energy and maintenance costs. Efficiently designed buildings are no more costly to design and build than inefficient buildings. Sustainable and renewable technologies are incorporated into all building designs. Commissioning ensures that buildings are built to the specifications and are turned over to the operations and maintenance staffs in proper operating order. Small scope alterations and renovations are also scrutinized for energy opportunities. Based upon the evaluation criteria established by the U.S. Green Building Council Leadership in Energy and Environmental Design(LEED), the College has established a goal of all future buildings attaining at least a LEED Silver Certification.

5. **Utility Master Planning and Central Plant Technology:** The recommendations of utility master plans continue to be implemented on the three campuses. Highly efficient central plant technology has been implemented on the Rockville and Germantown buildings and are proving more cost effective in light of the condition of aging building equipment and deregulated utility pricing. A new central plant and distribution system is being designed in late FY 2003 for the Takoma Park Campus. The plant will be installed in the basement of the new Student Service Center. A central point electrical metering study has been completed for the Germantown Campus and implementation feasibility will be investigated in FY 2005. A College-wide Utility Master Planning is commissioned in FY2005 in response to the recently completed College-wide Master Plan. Utility Master Planning is a lifecycle cost effective method of determining the optimum development of utility infrastructure, particularly for College Campus environments.

6. **Building Automation Controls and BACnet System Integration:** Standardization of communications protocols(BACnet) by the American Society of Heating, Refrigeration and Air Conditioning Engineers(ASHRAE) and acceptance by the engineering and manufacturing community has resulted in building control system integration capabilities and open competition. Integration also allows communications between building system components through the building automation system which increases capabilities while reducing costs. These systems are also capable of communicating over existing building networks, which eliminates redundant networks and further reduces costs. The College has introduced this technology on all three campuses and is incorporating it into all new building designs.

7. **Recycling and Hazardous Waste Disposal:** The College has an active recycling and hazardous waste disposal program. The results of the recycling program for FY 2002 are reported in the summary sheets.

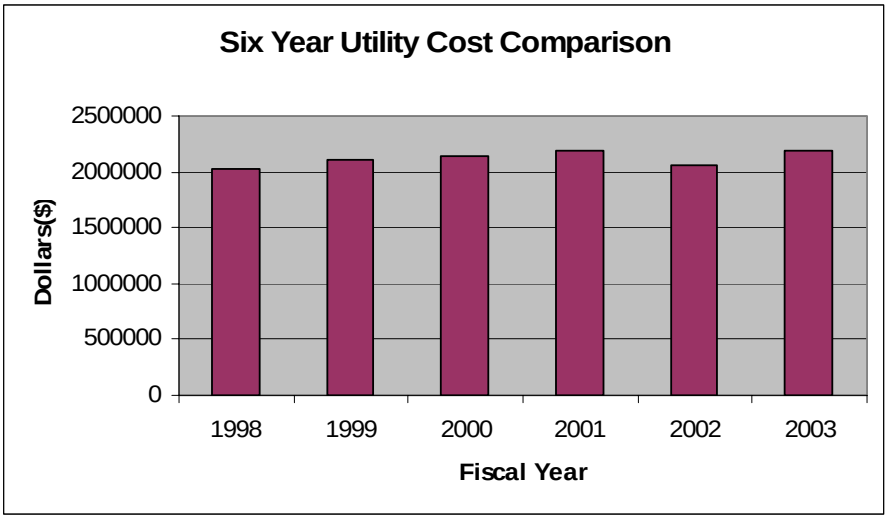
8. **Vehicle Fleet:** The College maintains approximately 50 vehicles to support the various functions of the College. The fleet is maintained by the Director of Facilities on the Germantown Campus. These vehicles are described on the summary sheets. The College also maintains various other specialty vehicles, such as mower, tractors, forklifts and carts. These are not included in the summary sheets.

9. **Capital Improvement Projects -** The College Resource Conservation Program projects are funded primarily by three Capital Improvement Projects(CIP), Energy Conservation(No. 816611), Planned Lifecycle Asset Replacement(No. 926659) and Takoma Park Central

Plant(No. 016600). The Resource Conservation Program does however influence decisions made in all capital and operating projects that involve the consumption of resources by the College community. $125,000 for staff salary and energy projects is included in the operating budget.

10. **Utility Management Databases;** The College continues to monitor utility expenditures and maintain utility consumption databases. This activity has proved valuable since the recent deregulation and resulting competitive procurement of electricity and natural gas has resulted in numerous billing errors. Timely monitoring and accurate records has allowed resolution of disputes with suppliers. Due to the increase quantity and complexity of billing issues since deregulation, the College has obtained consultant services to assist in billing monitoring and resolution. Accurate records and monthly monitoring also provide early warnings of unusual operating conditions that result in changes to utility consumption.

The chart below shows the College-wide utility cost comparison for the past six fiscal years. Last years increased cost was due primarily to increases in the unit costs for electricity and the phase-out of refunds from the deregulated sale of the utility generating assets.



Utilities:	units	total consumption (actual FY 03)	Percent change from actual FY 02	total cost (actual FY 03) $	Percent change from actual FY 02
Electricity	kWh	26,901,141	+5.1%	1,669,152	+6.3%
Natural Gas (firm)	therms	148,024	+24.7%	107,764	-5.8%
Natural Gas (Irate)	therms	425,376	+39.2%	243,037	+7.4%

Fuel Oil #2	gallons	41,000	+41.2%	40,069	+95.4%
Propane	gallons	3,031	N/A First Year Reported	6,524	N/A First Year Reported
Water	kgallons	22,236	0.8%	59,039	-2.2%
Sewer	kgallons	15,964	+6.1%	65,920	+9.4%
Total				2,184,981	+6.5%

New Measures

This table shows information on resource conservation measures implemented during FY 04
(July 1, 2003 through June 30, 2004)

Measures - New: (Implemented during FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Lighting	Various	50,000	(1,000)	Elect.	125,000	9,000
HVAC	Various	50,000	(1,000)	Elect.,NG & FO	50,000 kWh, 5000 Th	3,500 4,500
Controls	Various	25,000	(1,000)	Elect.NG & FO	25,000 kWh 5000 Th	2,000 4,500
Total		125,000	(3,000)			23,500
Operations and Maintenance:						
Total						
Description of Activities:						

New measures consist of Lighting, HVAC & Controls, New Building and Renovated Building Design and Central Plant Technologies that reduce energy cost, reduce energy consumption and reduce maintenance costs.

Existing Measures

This table shows information on resource conservation measures implemented prior to FY 04

Measures - Existing: (implemented from FY 98 to FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($)
Capital Improvement Projects:						
Lighting	Various	150,000	(2,500)	Electricity	502,500 kWh	55,000
HVAC & Controls	Various	580,000	(6,800)	Elect., NG & FO	425,000 kWh 9,575 Th	30,500 5,830
New Building Design	Various	600,000	(15,000)	Elect., NG & FO	730,000 kWh 25,000 Th	51,000 16,000
Central Plant Technology	Various	400,000	(10,000)	Elect., NG & FO	714,000 kWh 15,000 Th	50,000 10,000
Total		1,730,000			2,371,500 kWh 49,575 Th	218,330
Operations and Maintenance:						
N/A						
Total		N/A			N/A	N/A
Description of Activities:						

Existing measures consist of Lighting, HVAC & Controls, New Building and Renovated Building Design and Central Plant Technologies that reduce energy cost, reduce energy consumption and reduce maintenance costs.

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 05 (July 1, 2004 through June 30, 2005)

Measures - Planned: (for FY05)	projected completion date (mo/yr)	projected initial cost ($)	projected annual net impact on maintenance cost ($)	fuel type(s) effected and units	estimated units saved per year	projected annual cost savings ($)
Capital Improvement Projects:						
Tech Center Retrofit Lighting, HVAC & Controls	June 2005	200,000	(8,000)	Elect., NG & FO	150,000 kWh 7200 Th	15,000 5,000
Total		200,000	(8000)			20,000
Operations and Maintenance:						
N/A						
Total		N/A	N/A			N/A
Description of Activities:						

The Technical Center on the Rockville Campus was renovated in the late 1980s with energy technology of the era. New lighting, HVAC and controls technology now available will provide energy and maintenance savings while improving occupant comfort.

Utility Master Planning – To support the utility requirements for the College wide expansion described in the College's Master Plan submitted in the Spring of FY2004, the College intends to commission an update to the College's 1991 Utility Master Plan. Utility Master Planning is a useful planning tool which provides life cycle cost effective recommendations for supplying utilities and central plant infrastructure to campus environments.

Summary Page - Vehicle Fleet

vehicle type or vehicle group (other than AFVs) existing in fleet during FY03	no. of vehicles	type of fuel	units	total units per year	cost per unit	total VMT per year
Trucks	22	Unleaded	Gals	3700	$ 1.19	63,000
Vans	28	Unleaded	Gals	3900	$ 1.19	66,000
Dump Truck	1	Diesel	Gals	118	$ 1.40	2,000
Car	1	Unleaded	Gals	1180	$ 1.25	20,000

Changes in Vehicle Fleet From FY02 to FY03

new vehicles purchased	No. of Vehicles	fuel type	units	expected average units per year	expected average VMT per year
Vans	8	Unleaded	Gals	600	10,000
Car	0	Unleaded	Gals	2000	20,000
Truck	1	Unleaded	Gals	500	3700
old vehicles retired	No. of Vehicles	Fuel type	units	average units per year	average VMT per year
Vans	2	Unleaded	Gals	2000	20,000
Car	0	Unleaded	Gals	2000	20,000
Truck	1	Unleaded	Gals	400	3700
AFVs purchased	type or group	fuel	units	expected average units per year	expected average VMT per year
N/A					

Summary Page - Solid Waste & Recycling*

Waste Type	Quantity Collected (pounds/yr)	% of Total
Office Paper(White, Colored and Computer)	6,344	0.3
Corrugated Cardboard	342,950	16.7
Aluminum Containers	300	0.01
Co-mingled Containers	78,210	3.8
Yard Waste	566,000	27.7
Solid Waste For Disposal	1,050,820	51.4
Total	2,044,624	100

Summary Page – Other Recycling*

Waste Type	Quantity Collected (per yr.)	% of Total
Motor Oil	7,250 Pounds	100
Anti-Freeze	1,200 Pounds	100
Auto Batteries & Power Supplies	34 each	100
Fluorescent Light Tubes	1,600 Pounds	100

* Based upon February 2003 Annual Recycling Report for Calendar Year 2002.

CONCLUSIONS

The FY 2005 Montgomery College Resource Conservation Plan is a well-balanced, environmentally friendly, low risk, high return on investment program, based upon results of Master Planning and Energy Audit efforts. All investments are selected based upon their life cycle cost effectiveness and on their high probability for success. Utility consumption figures indicate that energy conservation measures implemented have had a positive, cost-effective impact. The potential exists for significant savings in lighting and controls, which continue to be identified during the walk-through and detailed energy audits. All new or renovated buildings undergo rigorous analysis to determine the optimum life cycle cost effective systems and meet or exceed the requirements of the Montgomery County Building Energy Design Guidelines. It is the College's goal to attain at least the U.S. Green Building Council LEED Silver Certificate Rating on all future building design. To ensure that the program is proceeding as predicted, various databases have been developed to provide accountability for the energy dollars spent. Future resource conservation plans will be able to itemize consumption trends and compare expenditures by category. Montgomery College is confident that the FY 2005 Resource Conservation Program will meet the goal of providing safe, reliable, environmentally friendly and economical facilities which enhance the learning environment at Montgomery College.

APPENDIX A

Energy Conservation CIP, No. 816611, PDF
Planned Lifecycle Asset Replacement CIP, No. 926659, PDF
Takoma Park Central Plant, CIP, No. 016600, PDF
Montgomery College FY 2005, Utility Projection Report
ICEUM Utility Rates, FY04, FY05, October 1, 2003

Energy Conservation: College -- No. 816611

Category	**Montgomery College**	Date Last Modified	**December 23, 2003**
Agency	**Montgomery College**	Previous PDF Page Number	**20-4 (03 App)**
Planning Area	**Countywide**	Required Adequate Public Facility	**NO**
Relocation Impact			

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY03	Est. FY04	Total 6 Years	FY05	FY06	FY07	FY08	FY09	FY10	Beyond 6 Years
Planning, Design and Supervision	1,345	1,340	5	0	0	0	0	0	0	0	0
Land											
Site Improvements and Utilities	59	59	0	0	0	0	0	0	0	0	0
Construction	2,634	1,669	215	750	125	125	125	125	125	125	0
Other	130	130	0	0	0	0	0	0	0	0	0
Total	4,168	3,198	220	750	125	125	125	125	125	125	0

FUNDING SCHEDULE ($000)

G.O. Bonds	2,074	1,104	220	750	125	125	125	125	125	125	0
Current Revenue: General	1,994	1,994	0	0	0	0	0	0	0	0	0
Federal Aid	49	49	0	0	0	0	0	0	0	0	0
State Aid	51	51	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				-1,140	-140	-160	-180	-200	-220	-240	0
Energy				-3,135	-385	-440	-495	-550	-605	-660	0
Program-Staff				0	0	0	0	0	0	0	0
Program-Other				0	0	0	0	0	0	0	0
Offset Revenue				0	0	0	0	0	0	0	0
Net Impact				-4,275	-525	-600	-675	-750	-825	-900	0
Workyears				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DESCRIPTION

This project provides funding to (1) continue development of a Collegewide energy management program, (2) implement life-cycle cost effective energy conservation measures based upon energy audits, and (3) review new building/renovation designs for compliance with Montgomery County Code, Ch. 8 Building Energy Performance Standards. Typical project activities include retrofits and modifications of lighting, controls, and HVAC equipment; building envelope modifications; solar energy retrofits; computer equipment for equipment control and energy-use monitoring; HVAC system evaluation/balancing studies; long-range energy/utility planning studies; central plant design plans (GT/TP); and waste management studies. Typical payback on lighting, controls, HVAC and solar energy modifications is two to five years.

JUSTIFICATION

As mandated by Ch. 8 of the County Code and supported by the College, County Council, the Interagency Committee on Energy & Utility Management (ICEUM), and the Citizens Energy Conservation Advisory Committee (ECAC), an energy cost reduction program has been developed. This program consists of energy audits performed by College staff to identify life cycle cost effective retrofits, including an aggressive lighting retrofit program.

STATUS

Continuing project. New construction and building renovation projects under review during FY05-06 include the Takoma Park Campus expansion and planning for new buildings on the Rockville and Germantown campuses. Campus utilities master plans were completed in FY90 (RV) and FY92 (TP and GT) and work is being coordinated with the outcome of the Collegewide Facilities Condition Assessment (8/02).

OTHER

The following fund transfers have been made from this project: $21,420 to Central Plant Distribution System project (#886676) (BOT Resolution #90-102 (6/18/90)); $70,000 to Fine Arts Renovation (#906601) (BOT Resolution #94-114 (9/19/94)), and $7,000 to Planning, Design & Construction project (#906605) (BOT Resolution #01-153 (10/15/01)). Beginning in FY98, the portion of this project funded by County Current Revenues migrated to the College's Operating Budget. It is anticipated that migration of this portion of the project will promote a desirable consistency with County budgeting practices and encourage greater competition in an environment of scarce resources. Reflecting the migration of this portion of the project, the College's Operating Budget includes funds for this effort.

FY2005 Appropriation: $125,000 (G.O. Bonds).

* Project expenditures will continue indefinitely.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY81	($000)
Initial Cost Estimate		1,008
First Cost Estimate Current Scope	FY02	3,918
Last FY's Cost Estimate		3,918
Present Cost Estimate		4,168
Appropriation Request	FY05	125
Appropriation Req. Est.	FY06	125
Supplemental Appropriation Request	FY04	0
Transfer		0
Cumulative Appropriation		3,418
Expenditures/ Encumbrances		3,184
Unencumbered Balance		234
Partial Closeout Thru	FY02	0
New Partial Closeout	FY03	0
Total Partial Closeout		0

COORDINATION

This project is coordinated with the scheduled building renovations on the Rockville and Takoma Park Campuses, and the planned construction of new buildings on the Rockville, Gemantown and Takoma Park Campuses.

ICEUM & ECAC
Facility Planning: College (#886686)
PLAR: College (CIP#926659)
Roof Replacement: College (CIP#876664)
Takoma Park Central Plant (CIP#016600)

MAP

Planned Lifecycle Asset Replacement: College -- No. 926659

Category	**Montgomery College**	Date Last Modified	**February 4, 2004**
Agency	**Montgomery College**	Previous PDF Page Number	**20-10 (03 App)**
Planning Area	**Countywide**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY03	Est. FY04	Total 6 Years	FY05	FY06	FY07	FY08	FY09	FY10	Beyond 6 Years
Planning, Design and Supervision	1,519	284	35	1,200	200	200	200	200	200	200	0
Land											
Site Improvements and Utilities											
Construction	24,062	6,391	871	16,800	2,800	2,800	2,800	2,800	2,800	2,800	0
Other											
Total	25,581	6,675	906	18,000	3,000	3,000	3,000	3,000	3,000	3,000	0

FUNDING SCHEDULE ($000)

G.O. Bonds	23,641	4,735	906	18,000	3,000	3,000	3,000	3,000	3,000	3,000	0
Current Revenue: General	1,940	1,940	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides funding for a comprehensive lifecycle renewal and replacement program to protect the investment in College facilities and equipment and to meet current safety and environmental requirements. Funding also provides for project management staff and/or services. This collegewide project is targeted at deteriorating facilities and deferred maintenance of major building systems. This project includes: (1) HVAC system renovation/replacement; (2) major mechanical/plumbing equipment renovation/replacement; (3) interior and exterior lighting system renovation/replacements; (4) electrical service/switchgear renovation/replacement; (5) building structural and exterior envelope refurbishment; (6) parking lot/roadway/sidewalk replacement; (7) asbestos removals not tied to building renovations; (8) major carpet replacement; (9) underground petroleum tank upgrades; and (10) site utility replacement/improvements.

JUSTIFICATION

In August 2002, the College completed a comprehensive building system/equipment assessment, including site utilities and improvements, that identified deficiencies, prioritized replacements and upgrades, and provides the framework for implementing a systematic capital renewal program to complement on-going preventive maintenance efforts. The College continues to have a significant backlog of major building systems and equipment renovations and/or replacements due to the age of the Campuses and deferral of major equipment replacement. Key components of the HVAC, mechanical and electrical systems are outdated, energy inefficient, and costly to continue to repair. The renovation and/or replacement of major building systems, building components and equipment, and site improvements will significantly extend the useful life of the College's buildings and correct safety and environmental problems. The Collegewide Facilities Condition Assessment identified a $57.8 million deferred maintenance backlog for the three campuses. If additional financial resources are not directed at this problem, College facilities will continue to deteriorate leading to higher cost renovations or building replacements.

Plans and Studies

Schematic Design for Curtain Wall Remediation - Macklin Tower (5/25/01), Curtain Wall and Building Envelope Investigation - Macklin Tower (3/16/01), Collegewide Facilities Condition Assessment (8/02), and Collegewide Facilities Master Plan (Pending - FY04).

Cost Change

Cost increase to fund corrective work identified in the Facilities Condition Assessment, including project administration.

STATUS

Ongoing.

OTHER

The following fund transfers have been made from this project: $47,685 to Takoma Park Child Care Center (#946657) (BOT Resol. #93106, #9426 & #94128); $185,000 to Rockville Surge Building (#966665) (BOT Resol. #11-2291 - 1/21/97); and $7,000 to Planning, Design & Construction (#906605) (BOT Resol. #01-153). The following fund transfers have been made into this project: $15,000 from Central Plant Distribution System (#886676) (BOT Resol. #98-82 - 6/15/98) and $25,000 from Clean Air Act (#956643) (BOT Resol. # 98-82 - 6/15/98). Beginning in FY98, the portion of this project funded by County Current Revenues migrated to the College's Operating Budget. Reflecting the migration of this portion of the project, the College's Operating Budget includes funds for this effort.

FY2005 Appropriation: $3,000,000 (G.O. Bonds). * Project expenditures will continue indefinitely.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY93	($000)
Initial Cost Estimate		3,000
First Cost Estimate Current Scope	FY03	22,081
Last FY's Cost Estimate		8,781
Present Cost Estimate		25,581
Appropriation Request	FY05	3,000
Appropriation Req. Est.	FY06	3,000
Supplemental Appropriation Request	FY04	0
Transfer		0
Cumulative Appropriation		7,581
Expenditures/ Encumbrances		6,676
Unencumbered Balance		905
Partial Closeout Thru	FY02	0
New Partial Closeout	FY03	0
Total Partial Closeout		0

COORDINATION

This project is coordinated with the Rockville, Takoma Park and Germantown Campus Utility Master Plans, building renovations on the Rockville and Takoma Park Campuses, and the following projects:

Elevator Modernization: College (CIP#046600)
Energy Conservation: College (CIP#816611)
Facility Planning: College (CIP#886686)
Life Safety Improvements: College (CIP#046601)
Macklin Tower Alterations (CIP#036603)
Roof Replacement: College (CIP#876664)
TP Central Plant (CIP#016600)

MAP

Takoma Park Central Plant -- No. 016600

Category	**Montgomery College**	Date Last Modified	**February 5, 2004**
Agency	**Montgomery College**	Previous PDF Page Number	**20-18 (03 App)**
Planning Area	**Takoma Park**	Required Adequate Public Facility	**NO**
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY03	Est. FY04	Total 6 Years	FY05	FY06	FY07	FY08	FY09	FY10	Beyond 6 Years
Planning, Design and Supervision	945	328	617	0	0	0	0	0	0	0	0
Land											
Site Improvements and Utilities	4,803	0	0	4,803	2,723	1,040	1,040	0	0	0	0
Construction											
Other											
Total	5,748	328	617	4,803	2,723	1,040	1,040	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	2,873	164	308	2,401	1,361	520	520	0	0	0	0
State Aid	2,875	164	309	2,402	1,362	520	520	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				-24	0	0	-4	-4	-8	-8	0
Energy				-60	0	0	-10	-10	-20	-20	0
Program-Staff				-24	0	0	-4	-4	-8	-8	0
Program-Other				-150	0	0	-25	-25	-50	-50	0
Offset Revenue				0	0	0	0	0	0	0	0
Net Impact				-258	0	0	-43	-43	-86	-86	0

DESCRIPTION

This project provides for the design and construction of a central heating and cooling plant on the Takoma Park Campus as recommended in the College's campus utilities master plan (October 1991). The plan for a Campus central plant was further developed in the Campus facilities master plan (February 1998) where it was recommended that the plant be located in the planned Student Services Center on the north end of the existing Campus. This project is integrated into the overall planning and coordination for the Campus expansion project. The project includes installation of boilers and chillers with associated equipment, the provision of natural gas service, and the construction of a hot water and cold water distribution piping system to eleven existing campus buildings.

JUSTIFICATION

This project implements the recommendations of the campus utilities master plan (10/91) and campus facilities master plan (2/98). The Campus' existing heating and cooling equipment is typically 20-30 years old and beyond its useful economic life. Due to the age of the equipment and increasing maintenance problems and costs, the Campus is experiencing a significant increase in mechanical system problems and heating/cooling outages. Based on a life cycle cost analysis, the installation of a central heating/cooling plant offers significant equipment replacement, energy and maintenance savings to the College.

Plans and Studies

Takoma Park Campus Utilities Master Plan (October 1991); Takoma Park Campus Facilities Master Plan (February 1998); and Program Justification and Description Report for Students Services Ctr (3/27/98) and Takoma Park Campus Central Plant & Dist. System (8/15/99).

Cost Change

Decrease due to change in project scope.

STATUS

Design phase. The Takoma Park central plant project implements a portion of the Campus' utilities master plan. The need to provide new systems for heating and cooling campus buildings was articulated in the utilities master plan and satisfying this requirement is critical to the planned renovation of the existing campus buildings. The planning for the central plant project was integrated into the plan for the Takoma Park Campus expansion with the September 1999 submission of the Part I/II facility program for the project to the State. The State approved the project program in July 2000. The College awarded an engineering design contract for this project in December 2001 and the central plant design is being coordinated with the design of the Student Services Center as part of the Campus expansion project. The facilities program for the project has been revised to reflect the relocation of the Cultural Arts Center and the concomitant decision to not extend the piping distribution system over the WMATE/CSX tracks to the College's Georgia Avenue expansion site. A revised facilities program will be submitted to the State in late 2003. The revised program will reflect a total cost reduction of $846,000, which includes a reconciliation of the state and county funding amounts for design and construction administration ($280,000), and a reduction in the pipe distribution system ($566,000).

OTHER

State share of project based on anticipated eligible costs. Design fees above approximately 7% of estimated construction costs may not be eligible for State reimbursement.

FY05 Appropriation: $2,723,000 ($1,361,000 -- G.O. Bonds and $1,362,000 -- State Aid).

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		5,204
First Cost Estimate Current Scope	FY03	945
Last FY's Cost Estimate		5,563
Present Cost Estimate		5,748
Appropriation Request	FY05	2,723
Appropriation Req. Est.	FY06	2,080
Supplemental Appropriation Request	FY04	0
Transfer		0
Cumulative Appropriation		945
Expenditures/ Encumbrances		330
Unencumbered Balance		615
Partial Closeout Thru	FY02	0
New Partial Closeout	FY03	0
Total Partial Closeout		0

COORDINATION

Takoma Park Campus Expansion (#996662)
Montgomery College asserts that this project conforms to the requirements of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

MAP

MONTGOMERY COLLEGE OFFICE OF FACILITIES FY2005 UTILITY PROJECTION REPORT

1/15/2004

UTILITY	ACTUAL FY 2003	BUDGET APPROVED FY 2004**	PROJECTED FY 2004*	PROJECTED UNIT CHNG. FY 2005*	PROJECTED CONSUMP.CHNG FY 2005***	PROJECTED FY 2005*
ELECTRICITY						
KWH	26,901,141	29,000,000	29,000,000	29,000,000	(2,000,000)	27,000,000
COST	$1,669,152	$2,076,400	$1,945,900	$229,680	($150,040)	$2,025,540
UNIT($/kWh)	$0.062	0.0716	$0.067	$0.008	$0.075	$0.075
GAS (FIRM)						
THERMS	148,024	215,660	215,660	215,660	(30,100)	185,560
COST	$107,764	$194,094	$215,660	($4,313)	($29,498)	$181,849
UNIT($/therm)	$0.73	$0.90	$1.00	($0.02)	$0.98	$0.98
GAS (IRATE)						
THERMS	425,376	450,000	450,000	450,000	0	450,000
COST	$243,037	$351,450	$401,850	($12,150)	$0	$389,700
UNIT($/therm)	$0.57	$0.78	$0.89	($0.03)	$0.87	$0.87
WATER						
KGALLONS	22,236	30,000	30,000	30,000	0	30,000
COST	$59,039	$82,200	$82,200	$2,400	$0	$84,600
UNIT($/kgal)	$2.66	$2.74	$2.74	$0.080	$2.82	$2.82
SEWER						
KGALLONS	15,964	20,464	20,464	20,464	0	20,464
COST	$65,920	$81,856	$81,856	$2,456	$0	$84,312
UNIT($/kgal)	$4.13	$4.00	$4.00	$0.120	$4.12	$4.12
NO.2 OIL						
GALLONS	41,000	50,000	50,000	50,000	0	50,000
COST	$40,069	$0	$0	$0	$0	$50,000
UNIT($/gal)	$0.98	$0.80	$0.84	$0.020	$0.86	$0.86
PROPANE						
GALLONS	0	0	0	0	3,500	3,500
COST	$0	$0	$0	$0	$3,500	$3,500
UNIT($/gal)	$0.00	$0.00	$0.00	0.00	$1.00	$1.00
TOTAL COST	$2,184,981	$2,786,000	$2,727,466	$218,072	($179,538)	$2,816,000
BUDGET	$2,290,000	$2,786,000	$2,786,000			$2,816,000
SURPLUS/(DEFICIT)	$105,019	$0	$58,534			($0)

* UNIT COSTS: 10/01/2003 ICEUM UTILITY RATES **ENERGY TAX INCREASE INCLUDED

***GT CHILD CARE+MISC.CONSUMPTION ADJUSTMENTS

TOTAL FY2005 BUDGET	$2,816,000

INTERAGENCY COMMITTEE ON ENERGY AND UTILITIES MANAGEMENT

UTILITY RATES

October 1, 2003

FY04, FY05

Note: Unit cost or percentage change is a cap. Individual agency unit costs may be below the ICEUM established number, but can not exceed the projection. Energy cost projections assume the fuel energy tax at the level established in FY99.

	SUBMITTED FY 04	PROJECTED FY04	PROJECTED FY05
Electricity	**7.6%** increase over Actual FY02	**9.2** %increase over Actual FY 03	**21%** increase over Actual FY 03
No. 2 Fuel Oil	$ **0.80** per gallon	$ **0.84** per gallon	$ **0.86** per gallon
Natural Gas	$ **0.90** per therm	$ **1.00** per therm	$ **0.98** per therm
Motor Fuels:			
Note: Includes $0.235 per gallon State tax.			
Unleaded	$ **1.10** per gallon	$ **1.10** per gallon	$ **1.35** per gallon
Note: Includes $0.245 per gallon State tax.			
Diesel	$ **1.05** per gallon	$ **1.05** per gallon	$ **1.30** per gallon
Note: CNG rate excluded Federal excise taxes, which the County does not pay.			
CNG: ($/gallon equivalent)			
Slow Fill.	$ **1.00** per g.e.	$ **1.00** per g.e.	$ **0.90** per g.e.
Fast Fill	$ **1.25** per g.e.	$ **1.25** per g.e.$	**1.49** per g.e.
Ethanol	**$ 1.45** per gallon	**$ 1.45** per gallon	**$ 1.68** per gallon
Propane	$ **1.00** per gallon	$ **1.00** per gallon	$ **1.00** per gallon
Water & Sewer	**0%** increase over Projected FY03	**0%** increase over Actual FY 03	**3%** increase over Actual FY 03

FY 2005

Resource Conservation Plan

Department of Public Works and Transportation
Division of Operations
Engineering and Management Services

February 2004

Table of contents

List of Tables

I. Executive Summary

The mission of the Engineering and Management Services at the Division of Operations is to put into action energy efficiency programs and to foster activities that enhance energy efficiency, reduce utility costs to ensure energy efficient operation of facilities.

This is accomplished by implementing our Energy Design Guidelines into new and renovation projects to ensure efficient operation and maintainability of mechanical and electrical systems. The Energy Design Guidelines document has been extremely effective in providing basic building design parameters for mechanical, lighting and envelope systems. The document is now being revised to provide specific design guidance for various building types such as libraries, indoor pools, fire stations, community centers, etc.

Innovation has been a key feature of all initiatives as the Division of Operations has consistently adopted new technologies and design concepts years ahead of common practice or code requirements. Being an "early adopter" also permitted the Department of Operations to earn over $1,000,000 in utility rebates and efficiency incentives during the 1990's.

In 1985 County legislation targeted a roughly 40 percent energy reduction in the design of new county facilities. At that time the Division of Operations began developing comprehensive, integrated design guidelines for new buildings. A series of research grants and projects brought together new technologies, cost control concepts and design process improvements. Today new county buildings meet the Division of Operations *Energy Design Guidelines* that are years ahead of other energy codes and standards anywhere in the U.S.

The energy program has been successful in consistently providing energy savings by enforcing energy efficient technologies and by energy conscious design practices that focuses on ensuring the implementation of energy savings opportunities in new designs and retrofit of existing systems.

II. Background

In 1985 County legislation targeted a roughly 40 percent energy reduction in the design of new county facilities. At that time the Division of Operations began developing comprehensive, integrated design guidelines for new buildings. A series of research grants and projects brought together new technologies, cost control concepts and design process improvements.

Mechanical systems typically account for more than 50% of the total energy consumption in a typical building. Today, with the prospect of ever increasing energy rates during due to unregulated energy suppliers and the loss of Standard Offer Service, principally, there needs be an effort to optimize mechanical systems design to achieve equitable savings in the operation and maintenance of mechanical equipment.

III. Energy Efficiency

A. Overview

The Montgomery County Division of Operations has an extensive Design and Energy Guide Line program to implement energy efficient technologies and promote design of sustainable buildings. In 1999, the Division of Operations released a CD-ROM version of the guidelines, incorporating multimedia training and internet tools. This document is now in the process of being updated. The new version will benefit from "lessons learned" during the last few years, and will be more comprehensive addressing specific facility types and suggested mechanical systems design approach for energy efficiency.

All architectural and engineering firms hired by the Division of Operations to design county facilities are expected to follow these guidelines. During the design process and specifically at the end of Schematic design, design development and construction document phases of the design, the division of operations will review in detail all document for compliance with the Guidelines. During the construction phases, the division of operations will implement a rigorous commissioning program to ensure compliance with intended design parameters.

B. Components of the energy efficient design

1. New Building Design

The Division of Operations Building Design Guideline and Energy Design Guideline documents are two documents that reflect our policy on designing new buildings with energy efficiency components. The goal of Energy Design Guideline is to improve the design of new facilities to meet low energy budgets and minimize life-cycle costs. These documents are updated as needed to reflect new technologies. The terms "green building", "green technology", "sustainable building" or "sustainable design", and "energy efficient design" have been used interchangeably. Sustainable Building Design encompasses five different areas only one of which addresses mechanical systems. The Energy Design Guidelines will specifically address energy consuming mechanical and lighting equipment and will facilitate compliance with "Green Building "design practices. The following components of energy efficient technology are only part of what the Division of Operations accomplishes by enforcing the Guidelines. Each technology provides a contribution based on implementation of new technology. Following is a list of technologies and estimated percent implementation completion.

Lighting

Historically, lighting was the biggest energy user in county facilities. Due to implementation of new technology, the current cost distribution for lighting is now about 15 %. In the late 1980's a major revolution occurred in lighting technologies for buildings. New

technology lamps, ballasts, fixtures and sensors entered the market that could provide energy savings of 40 to 90 percent in every office lighting application, from fluorescent lighting to down-lights to exit signs. Virtually every existing light fixture in county facilities had become "economically obsolete".

A 40 % energy savings is achieved by the replacement of T12 to T8 fluorescent lamps. Likewise, replacing incandescent fixtures with compact fluorescents provides an energy savings of 71 %. The estimated savings contribution for this technology assumes 15 % total energy consumption for lighting and that the program is now 100 % complete. Further maintenance costs may now be reduced by incorporating new technology that substantially increases longevity of T8 fluorescent tubes. The use of High output T5 bulbs will be implemented for the replacement of Metal halide bulbs in warehouses and repair garages.

As of 1999, all facility lighting has been converted to new technology lamps, ballasts and automatic controls.

Motors and Variable Fluid Flow

Design Guideline promotes Use of premium efficiency motors and Variable Frequency Drives. The use of premium efficient motors in new designs and retrofits has a significant contribution in our energy conservation program. An assessment program is now underway, however, it is estimated that through the efforts of new design and retrofits, about half of all fans and pumps (71/2 HP or larger) in all buildings, have been fitted with premium efficiency motors. In addition, about 15% of all fans and pumps now utilize variable speed drives through new design and retrofits. The combination of VFD and premium efficiency motors is responsible for a sizable energy savings.

Premium efficiency motors typically achieve a 4% energy savings over "standard motors.

Variable speed drives can reduce fan and pump motor energy usage by 50 % or more.

Energy Management system (EMS)

Depending on application and building type, the largest area of energy consumption in County facilities lies in Heating, Ventilating, and Air-Conditioning (HVAC) operations. To control this energy use, the Division of Operations undertook installation of energy management systems in all facilities. All HVAC systems are remotely monitored by computer dial-up on a daily basis. A significant additional benefit of the energy management and control systems is improved temperature control in work spaces and faster response to temperature problems in monitored buildings. A retrofit program is now underway to go one step further and actually be able to control equipment operation in addition to just monitoring performance.

By 1995 the Division of Operations had installed EMS systems in all major facilities. Today 60 buildings are monitored that add up to 2,717,930 square feet in floor space. The installed systems save over $140,000 per year in utility bills.

The chart below quantifies the net average energy savings for typical building components. The energy savings attributed to each component is the combination of two or three different technologies working together to achieve the desired result.

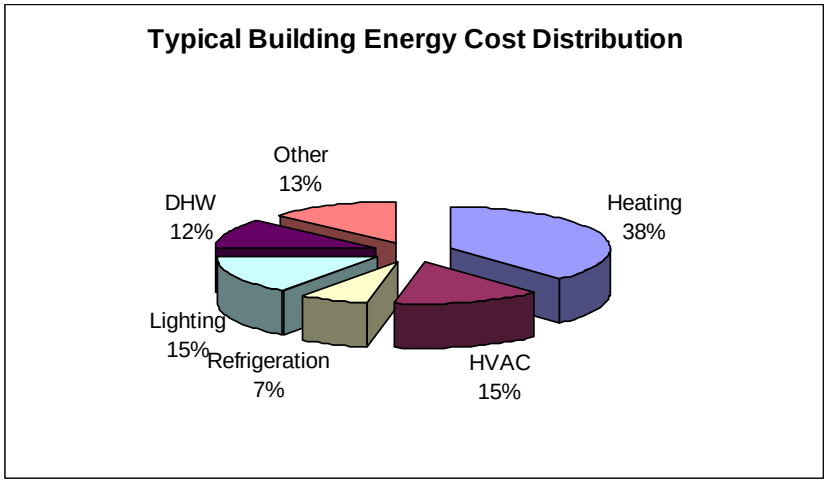


Table1: Typical energy cost distribution by selected building components.

In the figure above, the total energy savings from component individual contribution include reduced energy consumption by implementation of an energy efficient envelope.

Pumps and fans: Savings are derived from the use of energy efficient motors over conventional in conjunction with variable frequency drives wherever possible enabling pumps and fans to operate at their lowest speed to sustain air/fluid flow requirements resulting in 35-45% energy savings over constant volume machines.

Space Cooling and Heating: Savings are achieved through the careful selection of high efficiency and properly sized equipment and the use of heat recovery equipment when life cycle costs show that economic feasibility. Indoor swimming centers are a prime example. The waste heat from dehumidification equipment is utilized for heating pool water or reheat of indoor air to control humidity. The use of heat recovery air handlers are also extensively promoted to decrease the cost of tempering outside air during heating or cooling season.

Domestic Hot Water: The Division of Operations has been promoting the use of Natural Gas water heaters and boilers in lieu of electrically operated devices to further enhance savings. The chart below shows the relative cost for the same amount of energy using electricity or Natural

Gas. On the average it would cost twice as much to heat a building with electricity in lieu of Natural Gas.

The Division of Operations also promotes the use of high efficiency boilers (90-95% efficient), over conventional boilers and furnaces (75-80% efficient) to promote even more savings.

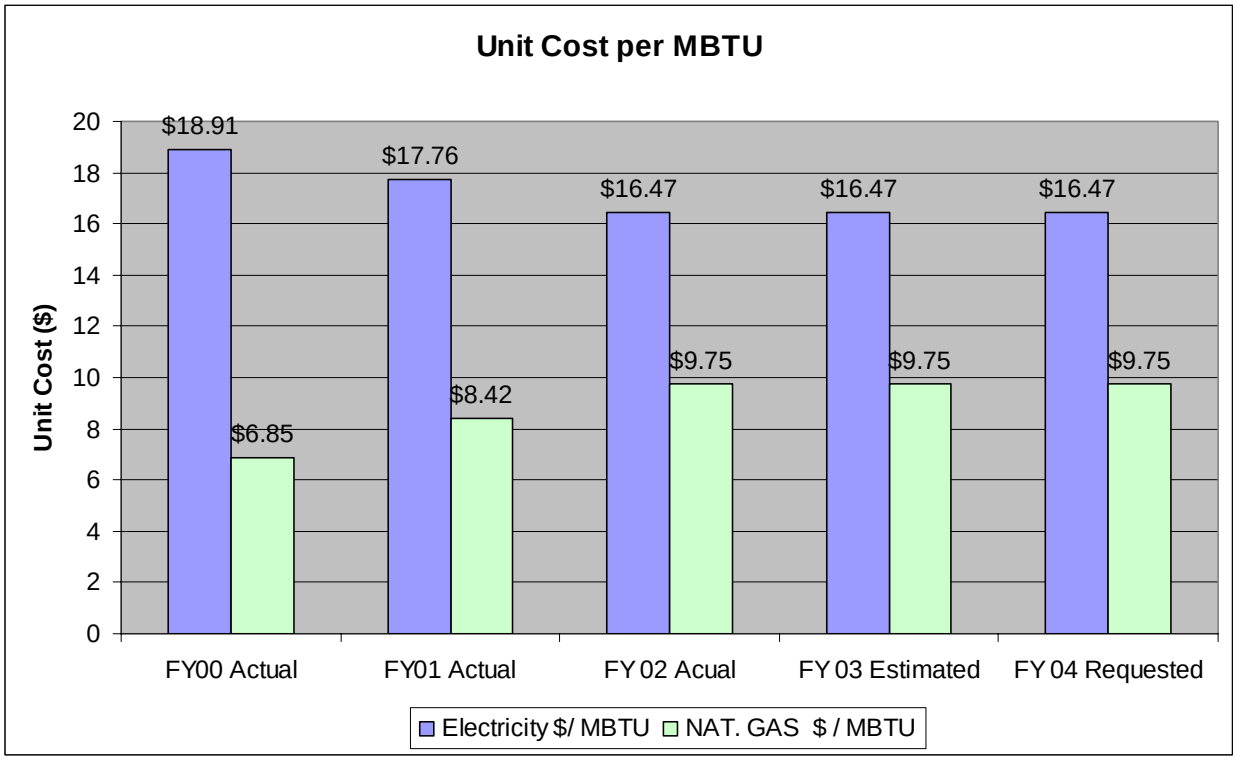


Table 2-: Electricity and Natural Gas cost for 1000 BTU units of Energy

<u>The following are not included</u> in the figure above but are worth mentioning:

Energy Source: The use of natural gas in lieu of all-electric provides a savings of approximately forty five cents for every dollar spent in electricity given that the cost of electricity is approximately twice as much as Natural gas, for the same unit (amount) of energy. (see Table 2-A)

Deregulation: The new electricity supply contract has resulted in an estimated $3.9 M savings in electricity contract procurement through May 2003.

EMS: Energy management systems can reduce operating cost as much as 25% by providing remote monitoring and *control* of HVAC and lighting systems.

Building Envelope

In the past, more special considerations were given to high performance glass or high efficiency insulation that could enhance the performance of HVAC equipment. All new designs are required to use double pane energy efficient glass and low "E" coatings where analysis shows that there is an economic benefit. Each building is evaluated separately through life cycle analysis to determine if the predicted savings occur at an acceptable break even point. The use of this technology enhances the performance of HVAC equipment.

Low "E" type windows can achieve 25% energy savings over conventional single pane type.
Day-lighting techniques whenever feasible can provide an additional 5-10% additional savings

Envelope and EMS: Although not mentioned in Table 2 as an energy savings contributor, envelope and EMS enable all other components to operate even more efficiently. Just like energy efficient motors and variable frequency drives are able to provide minimum air/water flows when coupled to fans and pumps as compared to constant flow counterparts, the use of Building envelope also plays a very important role. The use of insulating materials and energy efficient windows can decrease cooling/heating requirement and reduce equipment size, first and operating cost as much as 25 %. The Energy management system is also responsible for across the board operating cost savings by enabling remote monitoring and operation of all building HVAC components and lighting which may now be programmed to be used only when needed.

Energy Star Buildings

Reducing energy use in buildings also directly reduces atmospheric pollution and greenhouse gasses from power plants. Recognizing this link, the US EPA recently started promoting systematic efficiency improvements to facilities as a major environmental initiative. Energy Star Buildings is both a program of technical guidance and a recognition label for efficient buildings. To earn the Energy Star label, a facility must perform better than 75 percent of similar facilities nationwide in energy efficiency.

At the Division of Operations the Energy Star survey process is integrated into a larger program of facility assessments. The assessments identify tasks that may be assigned to various Division of Operations sections and programs for action. Projects that require capital

improvements to the facility, have an acceptable payback period through energy savings, and are not covered under other programs, will be assigned to the Energy Conservation CIP.

In one test building, "Energy Star" measures saved 40% of annual energy consumption, a $60,000 per year reduction in utility costs.

IV. Energy Management

A. Overview

Division of facilities and services receives all utility invoices from various utility providers. The Division of Operations has commissioned a utility tracking software (MEAT) in 2002 that replaced FASER program. Utility data for FY98 to 02 has been entered into the system by Mondre Energy and the Division of Operations will continue to input the data there after. The Division of Operations monitors utility use through this program and is capable of extracting various statistics of the utility consumption patterns for county facilities.

B. Electricity Deregulation

With the advent of electric deregulation there has been drastic changes occurring in the US electricity industry and a greater need to anticipate changes in provision of electricity and related services. Under current settlements in Maryland, Standard Offer Service (SOS) will remain capped until mid 2004. After that period, the rates offered by the utility will likely be pegged to market rates. After a period of state and federal regulation and otherwise constrained competition in the last 60 years, the electricity industry will soon be at the mercy of market forces. The County agencies are major consumers of utility services spending upward of $53 million annually for 2,200 separate accounts on electricity alone.

The County Task Force on Electric Deregulation was established in June 1997 to develop recommendations regarding public policies and strategic actions to be taken by various agencies prior to, during transition to, and under the coming electric utility deregulation. The task force membership represents a broad spectrum of county agencies and townships. The Division of Operations took the leadership role in establishing prospective suppliers and has also lead in contracting the procurement of electricity for all agencies. Cost effectiveness and reliability being fundamental to the procurement process.

Today, the Division of Operations is in the process of assembling a procurement document nicknamed “Request for Energy Procurement” or RFEP. This document was created in response to volatile market forces that will control utility commodity prices after the disappearance of Standard Offer Service (SOS) and the Terms and Conditions are based on existing County standards. Through the adoption of a special regulation from County Council this document may now be implemented outside of the County Procurement process. The expectation is of course to obtain lower prices, by having the ability of accepting bids within hours instead of days.

Electricity supply contract with current supplier resulted in a combined total savings of $3.9 million of which $2.2 million occurred in the initial 18 month and $1.7 million on subsequent extension for all participating agencies for contract starting on June 2000 and extended until June 2003. The savings were based on historical usage and standard offer pricing.

C. Technology Transfer

The Division of Operations experience is showing that energy-efficient building design pays immediately and can be successfully enforced. The Division of Operations has imparted its design guidelines and lighting retrofit program to many other state and local agencies. In 1992 the Interagency Committee on Energy and Utility Management officially adopted the Division of Operations Energy Guidelines for new building design as a model for use by member agencies. During 1993 through 1995, The Maryland Energy Administration contracted with The Division of Operations to modify guidelines for use on State buildings, and also to provide lighting retrofit seminars around the state of Maryland. Companies and government agencies around the world have purchased our energy guidelines.

D. Management of Energy Technology and Consumption

The Division of Operations will eventually maintain and operate all new buildings under design and as such, the division oversees the design, construction and maintenance of County government facilities under the executive branch of Montgomery County Government and supports facilities spanning a wide variety of functions associated with the County Government and public services.

Under the Division of Operations, the Engineering and Management Services (EMS) sets and enforces the Energy Design Guidelines standards for the Division as a whole, based on simultaneous consideration of energy efficiency, indoor air quality and maintainability. EMS prepares the Energy Program of Requirements (EPOR) for all new building designs as well as retrofits and provides technical guidance to the sections as needed on the path to reliable, economical facilities that are free of indoor air quality problems. As such, the division has played and it will continue to perform a key role in the energy efficiency of county buildings assisting the Design Division by enforcing the Energy Design Guidelines to ensure adequate mechanical design and construction of new facilities.

Also part of the Division of Operations is the Facility Maintenance and Operations Section (FMOS) that maintains and operates the buildings, including energy management systems working hand in hand with EMS.

V. Utility Budget

A. Overview

County facilities can be categorized as Government Service Centers, the Executive Office Building and Judicial Center, Libraries, Police Stations, Parking Lots, Detention Centers, Transmitter Sites, Community Health Centers, Day Care Centers, Halfway Houses, Community Recreational and Swim Centers, and Supporting Maintenance Shops and warehouses. The ages of these facilities vary from new to over 100 years old. The hours of operation vary from about 60 hours a week to continuous 24-hour operation. The end uses of energy are primarily lighting, heating, air-conditioning, computers, and domestic hot water.

Table 3: Utility Budget

UTILITY TYPE	ACTUAL FY01	ACTUAL FY02	ACTUAL FY03	BUDGET FY04	ESTIMATED FY04
ELECTRICITY ,					
COST	$3,798,406	$ 3,780,244	$4,165,960	$4,536,220	$4,579,459
KWH's (000's)	62,684,143	67,284,362	71,685,123		71,830,811
COST/KWH	0.0606	0.0562	0.0581	0.0000	0.0638
Divestiture Credit		$ (635,168)	$ (73,254)		
WATER AND SEWER			$0.0581		
COST	$477,687	$538,615	$622,832	$645,070	$645,066
GALLONS (000's)	123,013	129,215	149,456		154,753
COST/GALLON	3.8832	4.1684	4.1673	0.0000	4.1684
FUEL OIL #2					
COST	$67,100	$45,084	$76,396	$46,424	$77,000
GALLONS (000's)	51,363	59,129	57,850		58,000
COST/GALLON	1.3064	0.7625	1.3206	0.0000	1.3276
FUEL OIL #5					
COST	$0	$0	$0	$0	$0
GALLONS (000's)	0	0	0	0	0
COST/GALLON	0.0000	0.0000	0.0000	0.0000	0.0000
NATURAL GAS					
COST	$681,375	$666,961	$757,294	$876,070	$898,067
THERMS (000's)	809,203	684,188	778,256		823,914
COST/THERM	0.8420	0.9748	0.9731		1.0900
PROPANE					
COST	$0	$0	$0	$0	$0
GALLONS (000's)	0	0	0	0	0
COST/GALLON	0.0000	0.0000	0.0000	0.0000	0.0000
Professional Services	$157,496	$225,178	$146,866	$150,000	$150,000
TOTAL COSTS	$5,182,064	$4,620,914	$5,696,094	$6,253,784	$6,349,592

The Utility budget also includes a premium for the purchase of Green energy. The upcoming electricity procurement effort will include 5% of the total use (kWh) to be “green energy.” The energy type will be energy produced by wind mills located in the Western part of the State or West Virginia and will benefit the Counties air shed.

Net changes to electrical usage for new and leased facilities through next fiscal year are demonstrated in tables on subsequent pages for; "Projected Changes in Electrical Usage". This projection includes both increases in electrical costs to cover new and leased facilities. Reductions in costs resulting from current and future energy retrofit projects appear in the “new facilities” table. Additional information on new and leased facilities tables demonstrates "Projected Additions in Natural Gas Usage", and "Projected Additions in Water Usage".

Table 4: New Construction Projects - Projected Utility Usage in FY04 and FY055

ELECTRICITY	Net Area (Sq. Ft.)	Energy Use (kWh/SqFt)	Occupied Year	FY04 PrRte factor	FY05 PrRte factor	FY 2004 Change (kWh)	FY 2005 Change (Kwh)
Strathmore Concert Hall	194,500	11.00	FY05	0/12	9/12	0	1,604,625
Damascus Recreation Center	28,950	25.00	FY05	0/12	9/12	0	542,813
Subtotal	**223,450**					**0**	**2,147,438**
NATURAL GAS	**Net Area (Sq. Ft.)**	**Therms/Ft2 ESTIMATED**	**Occupied Year**	**FY04 PrRte factor**	**FY05 PrRte factor**	**FY 2004 New Usage (Therms)**	**FY 2005 New Usage (Therms)**
Strathmore Concert Hall	194,500	0.26	FY05	0/12	9/12	0	37,782
Damascus Recreation Center	28,950	0.26	FY05	0/12	9/12	0	5,712
Subtotal	**223,450**					**0**	**43,494**
WATER	**Net Area (Sq. Ft.)**	**kGal/Ft2 ESTIMATED**	**Occupied Year**	**FY04 PrRte factor**	**FY05 PrRte factor**	**FY 2004 New Usage (kGal)**	**FY 2005 New Usage (kGal)**
Strathmore Concert Hall	194,500	0.13	FY05	0/12	9/12	0	19,450
Damascus Recreation Center	28,950	0.16	FY05	0/12	9/12	0	3,474
Subtotal	**223,450**					**0**	**22,924**

FY 2005
Summary
The information on this page reflects the facilities owned or operated by this agency as of the end of FY 03 (June 30, 2003)

Agency	MC Government DPWT Division of Operations		
Number of Facilities	167	Change in number of facilities	0
Total square feet	3,386,112	Change in total ft^2	-9450
Average operating hrs/year	Not available	Change in avg. operating hrs/year	Not available
Other changes effecting energy consumption			

Utilities:	units	total consumption (actual FY 03)	Percent change from actual FY 02	total cost (actual FY 03) $	Percent change from actual FY 02
Electricity	kWh	71,685,123	(+)6.54%	4,092,703	(+)10.20%
Natural Gas (firm)	therms	778,256	(+)13.75%	738,846	(+)13.54%
Natural Gas (Irate)	therms		%		%
Fuel Oil #2	gallons	57,850	(TBD) %	76,396	(TBD) %
Propane	gallons	14,012	(+)34.52%	18,448	38.17%
Water/Sewer	gallons	149,456	(+)15.66%	622,832	15.64%
Total				5,549,228	%

New Measures

This table shows information on resource conservation measures implemented during FY 04 (July 1, 2003 through June 30, 2004)

Measures - New: (Implemented during FY 04)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($) *
Capital Improvement Projects:						
HVAC/Elec. Replacement	FY 04				384,000	23,000
Elevator Modernization	FY 04		(2,000)		100,000	8,000
EOB & JC Exterior Renovation (Phase III)	FY 04				135,000	8,000
Life Safety Systems: MCG	FY 04		(5,000)			5,000
Energy Conservation	FY 04		(15,000)	kWh	835,000	65,000
Total						109,000
Operations and Maintenance:						
Total						
Description of Activities:						

* Savings based on reduced energy consumption and reduced maintenance

Existing Measures

This table shows information on resource conservation measures implemented prior to FY 04

Measures - Existing: (implemented from FY 98 to FY 04) (*Excluding FY04*)	date implemented (mo/yr)	initial cost ($)	annual net impact on maintenance cost ($)	fuel type(s) effected and units	units saved per year	annual cost savings ($) *
Capital Improvement Projects:						
Elevator Modernization	FY 03		(2,000)	kWh	100,000	8,000
EOB & JC Exterior Improvements. Phase II	FY03			kWh	167,000	10,000
HVAC/Elec. Repl.:MCG	FY98-FY01			kWh	100,000	6,000
HVAC/Elec. Repl.:MCG	FY 02			kWh	50,000	3,000
HVAC/Elec. Repl.:MCG	FY 03			kWh	385,000	23,000
Energy Conservation	FY 98-FY 03		(15,000)	kWh	835,000	65,000
Life Safety Systems: MCG	FY02 / F 03		(10,000)	N/A		10,000
Total						
Operations and Maintenance:						
Total						
Description of Activities:						

* Savings based on reduced energy consumption and reduced maintenance

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 05 (July 1, 2004 through June 30, 2005)

Measures - Planned: (for FY05)	projected completion date (mo/yr)	projected initial cost ($)	projected annual net impact on maintenance cost ($)	fuel type(s) effected and units	estimated units saved per year	projected annual cost savings ($) *
Capital Improvement Projects:						
HVAC/Elec. Replacement	FY05			kWh	100,000	6,000
Energy Conservation	FY 05		(15,000)	kWh	835,000	65,000
Total						70,000
Operations and Maintenance:						
Total						
Description of Activities:						

* Savings based on reduced energy consumption and reduced maintenance